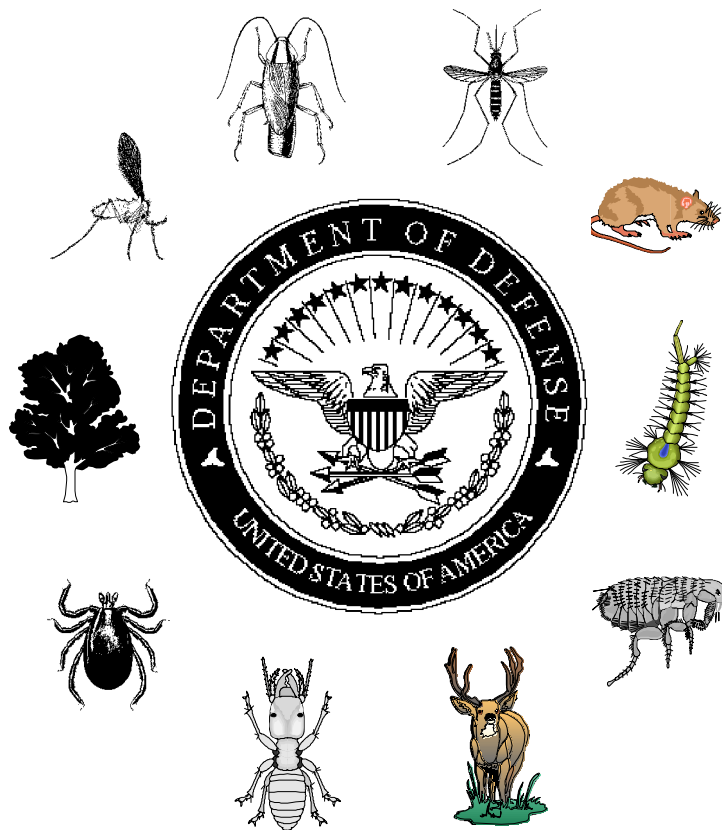


**OFFICE OF THE DEPUTY UNDER SECRETARY OF DEFENSE FOR
ENVIRONMENTAL SECURITY**

TECHNICAL INFORMATION BULLETIN

**ARMED FORCES PEST MANAGEMENT BOARD
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MAY - JUNE 1997

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TECHNICAL INFORMATION BULLETIN

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ANNOUNCEMENTS

Erratum - The May-June TIB carried an announcement regarding the updating of the AFPMB directory. Unfortunately, two digits were transposed in the fax number to which changes and corrections were to be sent. The correct fax number is **(301) 295-7483**. We apologize for any frustration and/or inconvenience this error may have caused. A corrected change-of-address form is provided at the back of this issue. ---COL Lawyer, DPMIAC.

1998 DoD Pest Management Workshop. The 1998 DoD Pest Management Workshop will be held February 22-27, 1998 at the Naval Air Station, Jacksonville, Florida. The theme for the 1998 Workshop is "Force Protection and Environmental Stewardship." This theme integrates the DoD mission to protect our deployable forces from vector-borne diseases and our DoD installations and natural resources from pest damage while we enhance our protection of the environment. This triennial Workshop is intended for DoD Pest Management Professionals or their equivalent.

Planning is under way for the Workshop program, which will consist of Opening and Closing Plenary Sessions, Medical and Engineering Sessions, Service-Specific Sessions, a Reserve Component Entomology Session, Poster Presentations, and Demonstration/Training Sessions. All oral presentations will be by invitation from the AFPMB or the Military Services' Senior Pest Management Professionals, who are responsible for the Service-Specific Sessions. Speakers/presenters for the workshop will be contacted during September concerning their presentations. At the 1998 Workshop, Working Group Sessions will be organized within the AFPMB Committees, which will meet during the Workshop. **On the final day of the Workshop, February 27, the 157th meeting of the AFPMB will be held. This meeting will be in lieu of the AFPMB meeting that is normally held in Washington, D.C., in March.**

Please contact the Workshop Coordinator, CAPT Herbert T. Bolton, AFPMB Research Liaison Officer, USDA, ARS, CMAVE, P.O. Box 14565, Gainesville, FL 32604; fax (352) 374-5955; or e-mail: boltonht@acq.osd.mil for information concerning Workshop topics, speakers, demonstrations, or poster sessions. His telephone number is (352) 374-5950. The next edition of the

Technical Information Bulletin will contain an update on the Workshop. By early October 1997, the AFPMB will mail registration and program materials for the Workshop to DoD Pest Management Professionals.

In Memorium - Jim Eversole, long-time Pest Management Professional with Atlantic Division, Naval Facilities Engineering Command, passed away of heart disease in July. Jim started work for the Navy in Norfolk in 1965 as the first-ever entomologist to enter federal service via NavFac's Professional Development Center training program. Except for a tour with NavFac's European Division, Jim worked exclusively for Atlantic Division until his retirement in 1989. Jim pioneered the DoD self-help pest control program. Noting that public works departments were spending too much money responding to service calls in housing for routine pest control, which tenants in a civilian setting would be expected to take care of, he came up with a better idea. The self-help program has been institutionalized in the DoD pest control instruction. The first attempt to solve minor pest problems such as nuisance ants or mice, is the responsibility of the housing occupants. Low toxicity or nontoxic materials and detailed instructions are provided as needed. The self-help pest control program has saved DoD millions of dollars and is one of Jim's lasting legacies.

INTEGRATED PEST MANAGEMENT

Potential IPM Methods for Lyme Disease Ticks.



Nature's own fungi and microscopic worms could help stop blacklegged ticks (*Ixodes scapularis*) in parks and backyards before they try to latch onto a human host and transmit

Lyme disease. Scientists at USDA's Agricultural Research Service have found that certain fungi and wormlike nematodes have the potential to reduce tick, *I. scapularis* populations. White-tailed deer often carry these ticks into residential areas. The new approach offers a natural alternative to outdoor spraying of acaricides. One nematode recruit, *Steinernema*, wriggles into natural body cavities of engorged female ticks. Another, *Heterohabditis*,

uses a single sharp tooth to gnaw through the tick's cuticle. The nematodes kill by unleashing bacteria that liquefy tick tissues. But they don't harm people or animals--only ticks and particular insects.

The fungi secrete enzymes that eat away the soft cuticles of immature tick larvae and nymphs. Then the fungi kill the ticks by growing inside them. *Ixodes* nymphs are the tick stage most likely to be the culprit when people contract Lyme disease. That's because the nymphs' small size allows them to feed undetected long enough to transmit the bacterium that causes Lyme. ARS scientists discovered one of the tick-infecting fungi. They've tentatively identified it as a new species of *Gliocladium*. In lab tests, it killed 60 percent of tick nymphs in two weeks. Another fungus, *Metarrhizium anisopliae*, killed 100 percent in one week. But the nematodes are the quickest, killing engorged adult female ticks within 24 hours. The researchers plan to follow up their lab findings with small-scale field studies. These will also help show where, when and how best to apply nematodes and fungi to tick infested areas--and which concentrations work best. Toxicity studies, such as tests to make sure the fungi's enzymes are safe for humans and deer, would be needed before this approach to tick control could be approved for use. Scientific contacts for more information are Dr. DoLores Hill for nematodes and Dr. Patricia Allen for fungi. At the USDA-ARS Parasite Biology and Epidemiology Laboratory, Beltsville, MD. Dr. Hill's phone is (301) 504-8770, and Dr. Allen's phone is (301) 504-8772. ---- PALLen@ggpl.arsusda.gov. ARS News Service Agricultural Research Service, USDA, Jan Suszkiw, (301) 344-2173, jsuszkiw@asrr.arsusda.gov July 22, 1997.

Snap On Baseboards. A new product is available that permits easy removal of baseboards and inspection inside double-wall constructed buildings. The product is Snap On Baseboards, which were developed in Hawaii to accomodate inspections for early signs of termite infestations. Because the baseboards are removable, they also allow easy treatment if infestations are discovered. The Snap On Baseboards incorporate a vinyl tension clip, which fastens the baseboard to the gypsum panels on the wall. The Snap On Baseboards have received National Stock Number 9330-01-444-1091. Pictures of the Snap On Baseboards and their installation, as well as information on part numbers, can be found at the following website

<http://www.buyhawaii.com/snaponbase/> ---- CAPT H. T. Bolton

Alternative Drywood Termite Treatments –

Alternate methods for treatment of drywood termites have been used extensively in recent years but efficacy data have been provided only by callback information. To obtain better efficacy data, Dr. Vernard Lewis of the University of California and Dr. Michael Haverty of the U.S. Forest Service tested the efficacy of Vikane, methyl bromide, liquid nitrogen, heat, microwaves and the Electrogun in a building constructed specifically for these tests. The study included both naturally and artificially infested wood. The following is a list of some of the results of that study:

- No method killed all termites in all tests. Both Vikane and methyl bromide killed all termites in the artificially infested boards but some termites survived in the naturally infested boards.
- Heat, cold and chemical fumigation were all better than 99% effective in controlling termite infestations in naturally infested boards.
- When the Electrogun was used according to instructions, it was 90 to 95% effective and generally gave better results than microwave treatments.
- Heat produced 97.5% mean mortality at 4 weeks in artificially infested boards and 100% mortality in naturally infested boards. Computed efficacy was better than 95% for artificial and better than 99% for naturally infested boards.
- Liquid nitrogen at the highest application rate killed all termites and thus showed better than 99% efficacy. About one fourth of this amount gave better than 99.6% mortality and better than 95% efficacy at four weeks for artificial infestations. For natural infestations similar figures of 99.8% mortality and better than 99% efficacy were produced.
- For drill-and-pin Electrogun treatment following the manufacturer's protocol, 98.5% mean mortality was seen for artificially infested boards, corresponding to better than 95% efficacy.
- For natural infestations, mean mortality at four weeks was 95.1%, corresponding to better than



90% efficacy.----The IPM Practitioner XIX(7): 9, July 1997.

Boracare Stops Subterranean Termite Feeding and Tubing – The USDA Forest Service conducted tests at the Harrison Experimental Forest, 20 miles north of Gulfport, Mississippi, to determine the level of long-term protection provided by Boracare on wood and to measure the tendency of subterranean termites to build shelter tubes over Boracare-treated wood to reach untreated wood above. The tests were conducted in an environment heavily infested with *Reticulitermes flavipes* and *R. virginicus*. Two types of wooden units were constructed using old (circa WW II) southern yellow pine from a demolished army barracks and new southern yellow pine from a local lumber yard. New-wood and old-wood units were constructed to simulate typical crawl space construction. Each unit was made up of two 10-inch long joists spaced 8 inches apart and two 12 inches long header joists. Joists were sprayed once on each side with a 1:1 water dilution of Boracare and the headers were treated twice on the inside surface only. Untreated wooden bait blocks were positioned on top of the joists. Identical new and old units were constructed and left untreated as controls.

Each unit was placed on two cement blocks, half buried in the soil with the voids in a vertical position. Untreated pine stakes were driven into the soil within the voids to attract termites. Five treated units and five untreated units of both new and old wood were placed randomly in 3 different plots for a total of 60 units. Each unit was inspected once a year over a 4-year period. The monitoring stakes in each unit showed a high level of termite attack, and active feeding was noted on most of the untreated controls. Of the 30 Boracare-treated units, only seven showed evidence of termite tubing, and in no case had termites tubed over the treated areas to reach the untreated bait blocks. At the last inspection, none of the treated units showed any signs of live termites.----The IPM Practitioner XIX(7): 10-11, July 1997.

Army Entomology Support for the 1997 Boy Scout Jamboree - By Public Law, the Army is the Executive Agent for joint military support of the quadrennial National Scout Jamboree. Since 1981, the Boy Scouts have held the Jamboree at Fort A.P. Hill, VA. This year the Jamboree was held from 28 July - 6 August; its theme was "Character Counts - Be Prepared for the 21st Century." The joint

military effort in entomology/preventive medicine support for the Jamboree was essential to the success of the event.

Mr. Karl Neidhardt, Army Center for Health Promotion and Preventive Medicine (CHPPM), Direct Support Activity-North, Fort Meade, headed up a team of entomologists (military and civilian) from Fort Meade, Edgewood, USAMRIID, and USDA to sponsor the Insect Study Merit Badge booth at the Jamboree. This was the third time that CHPPM, DSA-North, has sponsored the merit badge, which is one of 23 sponsored by the military on the Merit Badge Midway. The Insect Study Merit Badge booth served to highlight the role of military entomology in protecting the health of soldiers, sailors, airmen, and marines. Over 5,000 visitors came through the booth during the 9-day Jamboree. This Merit Badge introduces scouts to the field of entomology through 11 requirements, including making an insect collection of 50 specimens, rearing an insect through complete metamorphosis (e.g. mosquito), observing a social insect colony, and understanding basic principles of entomology and integrated pest management. Classes given several times a day and daily collecting trips were part of the schedule. Nearly 200 scouts completed at least some of these requirements, with 29 completing all of the requirements.

The 345th Medical Detachment (Entomology) (Army Reserve), Gainesville, FL had the vector suppression mission and was assisted by DVECC-Jacksonville. Using a pest management plan



developed by Dave Buzard, Fort A.P. Hill pest controller, Karl Neidhardt, DSA-North, and Joe Tarnopol, Military District of Washington Command Entomologist, the 345th completed the final tick control spray mission

before the arrival of the scouts. During the Jamboree, they performed mosquito control missions in the vicinity of the open-air arena before the big shows and responded to calls for pest control services from the Boy Scouts.

The 714th Medical Detachment (Entomology), led by CPT Dwight Rickard, performed the potable and recreational water surveillance program with the assistance of preventive medicine technicians from NEPMU-2, Norfolk, VA. The water system, built

with Boy Scout funding, is used only for the quadrennial Jamboree. During the Jamboree, it supports what is in essence the sixth-largest city in the State of Virginia: the 35,000 scouts and staff and 150,000 day-visitors.

A team from CHPPM, DSA-West, with assistance from DSA-North personnel, performed PCR techniques for pathogen analysis on ticks submitted from patients during the Jamboree. By the end of the Jamboree, over 1,100 ticks had been submitted. This was 2-3 times the number submitted during the previous two Jamborees.

During the months preceding the Jamboree, military preventive medicine planning was performed by MAJ Richard Johnson, DSA-North. This planning entailed developing the task list, ensuring adequate personnel were tasked to support the mission, directing a comprehensive pest profile of the Jamboree area, and incorporating a water surveillance protocol into the support plan.

The 1997 National Scout Jamboree is now a memory in the minds of all the scouts and other participants. The pest management/preventive medicine principles and practices that we espouse every day provided for an unforgettable experience to this generation of Boy Scouts.

RESERVE COMPONENT ISSUES

Unit Vacancies for Army Reserve Medical Entomologists - The AFPMB has completed a survey of authorized and vacant medical entomologist (72B - 67 C) slots for CONUS field units and Individual Mobilization Augmentation (IMA) Program positions. This survey's key findings, as summarized below and in figures a-c, indicate the following:

- 27 Medical Detachments (9 Entomology; 18 Sanitation) are currently authorized 72Bs, to include O4-command and company-grade (mostly O3) assignments. There appear to be 17 72B vacancies in these units. The reason for the uncertainty is that some units (e.g. the 988 MED DET in Austin, TX) are being filled by non-72Bs - usually 72Ds (+ESO), and may in fact be "available" to candidates with valid 72B credentials.
- 8 Commands, mostly AMEDD units or agencies, are authorized 19 IMA positions for 72Bs. Most (14) are field-grade positions, and all but one are located within 100 miles of Washington, DC. There appear to be 12 72B vacancies, including potential Drilling IMA (DIMA) positions at HQ, AMC and HQ, TRADOC, as well as, 3-4 vacancies at USADIA and USA CHPPM, respectively.
- 7 Medical Brigades now have authorizations for seven field-grade entomologists (mostly O5), all currently filled. One of these units, the 426 MED BDE in Salt Lake City, UT, is scheduled for deactivation by the end of FY98. Another, the 818 MED BDE in Atlanta, GA, was deactivated earlier this FY. The 330 MED BDE in Nashville, TN, carried two medical entomologists, one of whom (LTC Neil Woodiel) has retired.
- In Addition to these CONUS positions, which are tracked by USARC headquarters in Atlanta, GA, and ARPERCEN in St. Louis, MO, there is

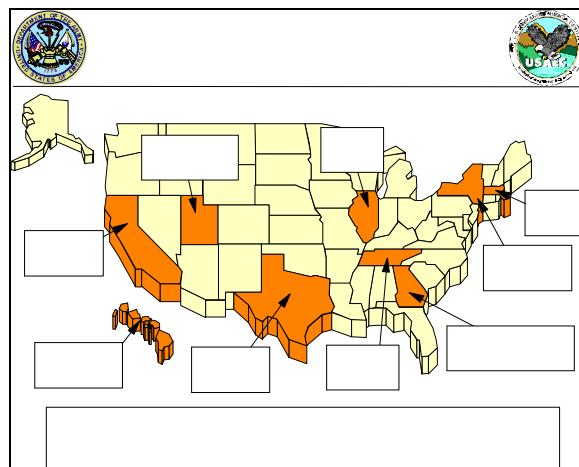


Figure a

an unknown number of OCONUS 72B

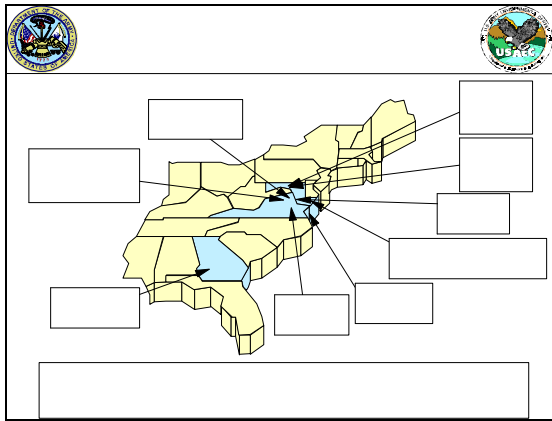


Figure b

authorizations (includes 1 IMA slot at TAMC and 1 active reserve position at the 9th ARCOM in Honolulu, HI) managed by the MACOMs with theater responsibilities in these regions. We hope to be able to report on these OCONUS vacancies in the future.

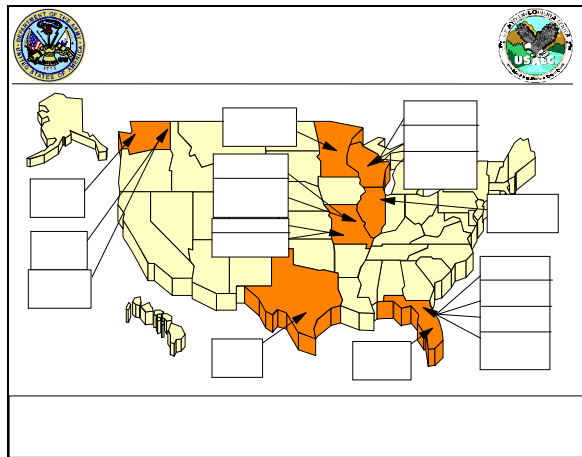


Figure c

- To summarize, about 30 authorized 72B positions are currently vacant or filled by non-MOS-qualified officers, in at least 21 Army reserve units from 10 states. By far the most critical shortage is for commanders and company grade officers in medical detachments, many of which were formed during the past two years, and all of which fill a critical void left by inadequate preventive medicine support capabilities within the Active Component Force structure. These 72B shortages are now recognized as critical by Army planners, who

have tasked AMEDD recruiters to seek qualified candidates to fill them.

- A more complete listing of Army reserve units, with 72B authorizations and vacancies, locations and points of contact, is being compiled and will be included as part of the subdirectory of the DoD reserve component pest management professionals. Readers with more immediate interest can contact COL Lawyer or Dr. Steve Bennett (LTC, USAR) for more information.

Recent Transitions - CPT Jim Dennett recently joined the 807th Medical Brigade in Seagoville, TX, as BDE Medical Entomologist. CPT Jeff Ludeman is now assigned to the 4221st USA Hospital Detachment #1 in Ft. Sheridan, IL, as a medical entomologist. Congrats guys, and welcome aboard.

Recruitment Duty Anyone? - As mentioned above, AMEDD recruiters are now trying to fill critical 72B vacancies nationwide. Because the specialty and the assignments associated with it are not fully understood by recruitment officers, it is possible, even likely, that RC entomologists can receive RST credit and even be activated for up to two weeks each year (at recruit command expense) to help fill these critical vacancies. There are five AMEDD recruitment detachments nationwide, with command headquarters in Atlanta, GA, Aberdeen Proving Ground, MD, and San Francisco, CA. Reserve Entomologists with interests in pursuing this option next FY should contact Dr. Steve Bennett for additional information.

MEDICAL ENTOMOLOGY

Land Use and Disease - It is well known that changes in the environment affected by human activity often cause changes in disease transmission. For example, in tropical regions, schistosomiasis is typically associated with water impoundment and irrigation schemes. However, not all land use changes involve water. Reforestation or planting of commercial tree crops can have serious adverse consequences, particularly with respect to malaria. Problems of this kind are now common in Southeast Asia, where commercial orchards and plantations of rubber or teak increasingly dominate the landscape.

In strategically important Chanthaburi

Province of Thailand, along the Cambodian border, the total area of original forest was reduced from 37% to 23.5% between 1986 and 1995. Even more dramatically, in Kanchanaburi Province, on the Burmese border, total forest area plummeted from 59.5% to 23.5% during the same period. Over the last 20 years, these jurisdictions have witnessed a massive conversion of original forest to commercial tree crops, including a 7% increase in rubber plantations and orchards in the past decade alone. Recent research in these provinces has demonstrated that the malaria vector *Anopheles dirus* is extremely well adapted to commercial tree plantations, where it is a far more efficient vector than in its natural forest habitat. Thus malaria, which was indigenous to extensive natural forest but had disappeared when the forest was cut, is re-emerging in Southeast Asian tree plantations, where the mosquito vectors both thrive and are provided with a steady supply of human hosts to infect. Interim data for 1996 and 1997 indicate that in Chanthaburi Province one third of malaria cases occur in commercial forests: approximately 93% in orchards, 5% in rubber plantations, and 2% in teak plantations.----TDR News (53): 1, 3; JUN 97.

Haitian Hookworms - In the developing world, helminth infections tend to be stable because of the general lack of sanitary waste disposal systems and the absence of proper community hygiene practices. However, human degradation of the environment



impacts all organisms, helminths included, and may cause some species to suddenly reemerge in areas where they are otherwise at low prevalence. Between

1990 and 1996, investigators from the University of Alabama at Birmingham and the Centers for Disease Control and Prevention in Atlanta, Georgia, observed an unexpected upsurge in hookworm infections in the Haitian town of Leogane while conducting a routine longitudinal study of risk factors for Bancroftian filariasis in children. The increase may have been an indirect consequence of Haiti's perennial political strife.

Leogane is a small, urban community surrounded by extensive sugar cane fields. Access to piped water is limited, and there is no system for sewage disposal. Most people live in mud or

concrete block dwellings with no electricity or indoor plumbing and few latrines. Children are exposed early in life to many parasites, including intestinal helminths. Over the 6-year period of this study, the prevalence of the common intestinal helminths *Ascaris lumbricoides* and *Trichuris trichiura* in Leogane's children remained relatively stable, but the prevalence of hookworm increased markedly from 0% to 12-15%, with most of the increase taking place between 1993 and 1995.



This sudden shift in hookworm prevalence may have been due to continued flooding of the River Royone, which runs through Leogane. Because of

extensive deforestation of this river's watershed, the river channel accumulates silt rapidly and must be maintained with heavy equipment. After the political upheaval of 1990, maintenance of the channel and its tributaries was no longer possible, and by 1992 the Royone frequently overflowed its banks, flooding Leogane and surrounding areas. Altered river drainage patterns turned much of the community into a delta, may possibly have changed the soil type by depositing a layer of sandy loam topsoil, and allowed the soil to remain moist and conducive to hookworm transmission. In any event, the increase in hookworm prevalence coincides temporally with the lack of maintenance of the river channel. No dramatic changes in rainfall, temperature, or other environmental variables were noted during the study period. Because of open enrollment, the average age of surveyed children increased only from 21 to 44 months, meaning that increases in hookworm prevalence were probably not age-related.----Emerging Infectious Diseases 3(3): 391-393, JUL-SEP 97.

Deer Ticks in Duh City - For the last six years, an average of 20% of all the cases of Lyme disease reported from the United States have occurred in Westchester and Suffolk Counties, in southeastern New York. Westchester County's southern border is with New York City's Borough of the Bronx, but while spread of the tick vector, *Ixodes scapularis*, north and west of Westchester has been well

documented, movement of ticks southward toward the city has been largely ignored, despite rising Lyme disease case numbers in southern Westchester and a relatively high incidence of human parasitization by vector ticks. Moreover, the discovery in Westchester of human granulocytic ehrlichiosis (HGE), a potentially fatal tick-borne disease, and of the causative *Ehrlichia equi*-like rickettsial agent in *I. scapularis* underscores the importance of precisely defining the geographic range of the deer tick. This is particularly true in urban areas, where residents may not be familiar with vector-borne diseases.

In August 1995, researchers from Fordham University's Louis Calder Center in Armonk, New York, and the New York Medical College in nearby Valhalla trapped mammals on five study grids situated in Van Cortlandt Park, a vast (468 ha) and largely wooded area in the northwestern Bronx adjacent to Westchester County. To further evaluate the disease risk for park visitors, host-seeking ticks were sampled by dragging in July 1996, when nymphal *I. scapularis* were expected to be active. Of 33 captured mammals, 19 were white-footed mice (*Peromyscus leucopus*), the primary reservoir of the agent of Lyme disease, *Borrelia burgdorferi*. Four (21%) of these mice harbored *I. scapularis*: two mice each hosted a single larva, one hosted two larvae, and one hosted five larvae. None of the other captured mammals were parasitized by *I. scapularis* or other tick species. Drags yielded one nymph and two males of *I. scapularis* along with a single nymph of *I. dentatus*.

Results of PCR analyses indicated that one pool of two larvae, removed from the white-footed mouse that had hosted five *I. scapularis*, was positive for the ehrlichial agent of HGE. Of the four questing ticks captured by dragging, the two male *I. scapularis* were infected with *B. burgdorferi*. The single *I. dentatus* nymph was not infected with either agent, and no specimens were infected with both agents. Although anecdotal reports of Lyme disease in New York City residents who had not traveled to disease-endemic sites elsewhere had earlier suggested the presence of *I. scapularis* within city limits, this is apparently the first report of bona fide specimens of the deer tick from wildlife in any of the city's five boroughs.

These findings have several implications. First, the distribution of infested hosts suggests at least three potential tick population foci within Van

Cortlandt Park. Second, the larvae collected in this study were likely derived from eggs laid by replete females in the park, implying that host-seeking adults had successfully found medium- to large-sized mammals on which to feed during the previous adult season. Third, the potential exists for increased exposure of park visitors to the agents of Lyme disease and HGE, although in highly focal tick "islands," rather than the peridomestic environment characteristic of the suburbs. The presence of white-tailed deer (*Odocoileus virginianus*) in Van Cortlandt Park, if only on an intermittent, seasonal basis, may serve to introduce new ticks from neighboring Westchester County. Even in the absence of white-tailed deer (the preferred host of adult *I. scapularis*), small populations of deer ticks may be maintained indefinitely by medium-sized mammals like raccoons (*Procyon lotor*). And other wooded parks in the city (e.g., Pelham Bay Park, in the northeast Bronx) or wooded cemeteries (e.g., Woodlawn, between Van Cortlandt and Pelham Bay) may similarly shelter ticks infected with Lyme disease or HGE.---Emerging Infectious Diseases 3(3): 353-355, JUL-SEP 97.

Confirmation that White-tailed Deer are Natural Reservoir Hosts of *Ehrlichia chaffeensis* - Human monocytic ehrlichiosis (HME), caused by *Ehrlichia chaffeensis*, has been diagnosed in 30 states, most of them in the southeastern, south-central, and mid-Atlantic regions of the United States. Though HME is not a reportable disease, more than 400 cases have been confirmed since 1986, including occasional fatal infections. There is convincing evidence that HME is a tick-borne zoonosis that is transmitted primarily by the lone star tick, *Amblyomma americanum*. The geographic distribution of HME cases generally coincides with that of *A. americanum*, and PCR analyses have demonstrated *E. chaffeensis* DNA in adult *A. americanum* from six states. Moreover, *A. americanum* has been specifically identified as the source of tick bites among HME patients.

The white-tailed deer (*Odocoileus virginianus*) has been implicated as a reservoir host on the basis of both field and experimental studies. *E. chaffeensis*-reactive antibody titers of $\geq 1:128$ have been detected in 43% of 1,269 deer from 17 states. The prevalence of antibodies exceeded 70% among numerous deer populations examined in 12 southern states. Experimentally inoculated white-tailed deer are rickettsemic for at least 2 weeks and

develop *E. chaffeensis*-reactive antibodies but do not become clinically ill. Recently, PCR has been used to demonstrate that deer from some populations with a high prevalence of *E. chaffeensis*-reactive antibodies also have the *E. chaffeensis* 16S rRNA gene in their blood, spleens, or lymph nodes. As well, white-tailed deer are important hosts for all three life stages of *A. americanum* and, as with HME patients, the distribution of seropositive deer is



congruent with the general distribution of *A. americanum*. Field studies have demonstrated both temporal and site-specific geographic associations between *A.*

americanum infestations and *E. chaffeensis*-reactive antibodies among wild deer populations, and recent experimental studies have confirmed that *A. americanum* is capable of trans-stadial transmission of *E. chaffeensis*.

Despite the serologic, molecular, and ecological evidence pointing to the probable roles of lone star ticks and white-tailed deer in the epidemiology of HME, *E. chaffeensis* has not previously been isolated from ticks or deer in nature. Now, however, a team of researchers from the University of Georgia and the Centers for Disease Control and Prevention in Atlanta have succeeded in confirming by culture isolation that wild white-tailed deer are naturally infected with *E. chaffeensis*. Thirty-five white-tailed deer collected from three *Amblyomma americanum*-infested populations in Georgia were examined for evidence of *E. chaffeensis* infection by serologic, molecular, cell culture, and xenodiagnostic methods. Twenty-seven deer (77%) had *E. chaffeensis*-reactive indirect fluorescent-antibody assay titers of $\geq 1:64$, and the blood, spleens, or lymph nodes of seven (20%) deer were positive in a nested PCR assay with *E. chaffeensis*-specific primers. *Ehrlichia chaffeensis* was isolated in DH82 cell cultures from the blood of five (14%) deer, including two deer that were PCR negative--the first recovery of this human pathogen from a nonhuman source. The combination of culture and PCR results indicated that six (17%) deer were probably rickettsemic and that nine (26%) were probably infected. Restriction digestion of PCR products amplified from deer tissues and cell culture isolates resulted in a banding pattern consistent with the *E. chaffeensis* 16S rRNA gene sequence. The

sequences of all PCR products from deer tissues or cell culture isolates were identical to the sequence of the Arkansas type strain of *E. chaffeensis*. When viewed in the context of earlier studies, these findings provide strong evidence that *E. chaffeensis* is maintained in nature primarily by a tick vector-vertebrate reservoir system consisting of lone star ticks and white-tailed deer.----Journal of Clinical Microbiology 35(7): 1681-1686, JUL 97.

USDA Northeast Area-wide Tick Control Project .

The U.S. Department of Agriculture, Agricultural Research Service (ARS), is beginning a Northeast Area-wide Tick Control Project. This research project is a community-based field trial of ARS-patented tick control technology designed to reduce the risk of Lyme disease in the Northeastern states. ARS has developed a passive topical treatment system called the '4-poster' to treat deer with small quantities of topical pesticide as the deer feed on corn from the '4-poster.' The ARS and a consortium of universities and state agencies will conduct this five-year cooperative demonstration project at five locations in Connecticut, Maryland, New Jersey, New York, and Rhode Island. For the DoD, this demonstration is important for several reasons:

- The project addresses the most prevalent vector-borne human disease in the U.S. It will both examine the reduction in tick populations in the treatment areas, and the reduction in the prevalence of pathogens for Lyme disease, human granulocytic ehrlichiosis, and human monocytic ehrlichiosis.
- One of the field sites for the project is Naval Weapons Station Earle, Colt's Neck, Monmouth County, New Jersey. This location is endemic for Lyme disease. Cases of Lyme disease in civilian workers and Navy and Army military personnel on training exercises have historically occurred at this installation. Research at this location should provide important information for exporting this technology to other military installations.
- This research demonstration project is also consistent with our Measure of Merit for reduction in pesticide usage. In contrast to the high pesticide doses required for area-wide acaricide applications, the technology

in this research project uses extremely low doses of active pesticide ingredient per deer treated or per acre under control.

- Directly related to this area-wide tick control project is the completion of a comprehensive computer model that simulates *I. scapularis* and Lyme disease risk. The LYMSIM model indicates that self-treatment of deer is the most efficacious technology for reducing the abundance of *I. scapularis* in long-term management programs over large areas. The reference citation for the LYMSIM model is: Mount, G. A., D. G. Haile, and E. Daniels. 1997. Simulations of blacklegged tick (Acari: Ixodidae) Population Dynamics and transmission of *Borrelia burgdorferi*. J. Med. Entomol. 34(4): 461-484.
- This demonstration project and publication of the LYMSIM model directly answer past DoD research recommendations in pest management to the USDA to: (1) "Develop and transfer integrated control strategies for *Ixodes* species, the principal vectors of Lyme disease, and other tick species in a peridomestic environment," (2) "Investigate the feasibility of treating white-tailed deer with systemic and topical acaricides to control *Ixodes* species," and (3) "Complete development of the model for *Ixodes* ticks and Lyme disease control."

The USDA, ARS's progress on these projects of interest to the DoD is indicative of the long-standing and productive research partnership between the DoD and USDA.

The AFPMB will provide progress reports on this demonstration project in the Technical Information Bulletin as further information is made available. CAPT H. T. Bolton, MSC, USN, AFPMB Research Liaison Officer, can be reached for additional information at (352) 374-5950, fax (352)374-5955, or e-mail (boltonht@acq.osd.mil). ---- CAPT H. T. Bolton

Resurgence of Malaria. The lead article in the August 1997 issue of Atlantic Monthly magazine provides an excellent summary of the present status of malaria, its increased incidence in many parts of the world, and the state of efforts to control and treat

the disease. The author, Ellen Ruppel Shell of Boston University, provides an informative and accurate picture of this disease. The article is an important overview of this threat to military personnel and the millions of U.S. tourists who travel to areas that are endemic for the malaria---- The Atlantic Monthly, August 1997.

Malaria Vaccine. Dr. Robin F. Anders of the Walter and Eliza Hall Institute of Medical Research, Melbourne, Australia, and Professor Allan Saul of the Queensland Institute of Medical Research, Brisbane, recently reported on advances in a vaccine for malaria that is nearing testing in humans. The vaccine is now undergoing toxicological evaluation. It successfully provided protection in trials on monkey and mouse models. Dr. Anders and Professor Saul warn against thinking that vaccines alone will have a significant impact on malaria. They state that vaccines should be viewed as tools in integrated programs that include vector control, health education, early detection, and appropriate treatment----The Hindu Online, Wednesday, August 27, 1997 through E-mail from the USAID, Environmental Health Project.

USAMRIID and NAMRIID Conduct Collaborative Studies on Peruvian Vectors.

Research Entomologists of the Vector Assessment Branch, Virology Division, US Army Medical Research Institute of Infectious Diseases (USAMRIID), Ft. Detrick, MD, and of the Navy Medical Research Institute Detachment (NAMRID), Lima, Peru, are collaborating on studies to gain a better understanding of the epidemiology of vector-borne disease epidemiology in the Amazon Basin.

The study focuses on the protection of military personnel through vector surveillance, using sentinel animals to detect transmission of arthropod-borne pathogens, and limited human disease surveillance. The study is programmed to expand to include wider usage of sentinel animals, surveillance of potential vertebrate hosts (disease reservoirs), the development of rapid diagnostics for the detection of arthropod-borne pathogens, and human prevalence/incidence data. The ultimate goal is to establish criteria for vector and disease suppression strategies to protect military and civilian personnel deployed to Neotropical regions.

Mosquito collections were conducted at 6-week intervals, in forest, rural and peri-urban habitats near

Iquitos, Peru. At the forest location, hourly human-bait collections were made at ground level and in the forest canopy 10 m above ground level. In rural and peri-urban locations, hourly human-bait collections were made outside and inside human dwellings. In addition, CDC miniature light traps, augmented with dry ice, were operated at 12-hour intervals, from dawn to dusk or dusk to dawn, each day in forest and rural locations.

Forest collections have yielded more than 75 species, representing 14 genera of mosquitoes (n=200,000+). The most prevalent species were *Psorophora albigena*, *Aedes fulvus*, *Ae. serratus*, *Culex (Melaniconion) pedroi*, and *Cx. (Mel.) vormerifer*. Viruses were isolated from less prevalent species: *Ae. hastatus*, *Ps. ferox* and *Limatus assuleptus*. The number of mosquitoes collected per hour varied between 20 - 200 over a 12 month period. However, while *Cx.(Mel.)* spp. were active only at night, *Ps.* spp. were active during the day. In contrast, *Ae. fulvus* and *Ae. serratus* were active 24 hours a day. *Anopheles (Ste.) kompi* and *An. (Ano.) mediopunctatus* were the predominant anopheline species collected at forest sites. *An. mediopunctatus* has been implicated in the transmission of human malaria in forested habitats and may be a vector of monkey malaria, *Plasmodium brazilianum*, causing human disease similar to *P. malariae*.

In village and rural locations, more than 40 mosquito species, representing 11 genera, were collected. The most prevalent species were *Anopheles darlingi*, *Mansonia titillans*, *Ma. indubitans*, *Culex (Mel.) ocosa*, and *Coquilletidia venezuelensis*. Species distribution and time of mosquito activity differed at the various rural collection sites. In rural villages, where the human malaria incidence was >40% during May (1997), *An. darlingi* biting activity ranged seasonally from <10 - >200/24 hour cycle. *An. darlingi* actively sought human hosts during the day, although biting rates were much higher at night. There was little difference between indoor and outdoor biting rates at night.

There have been 43 virus isolates from 12 species of mosquitoes (representing 4 genera). Most of the isolations were *Cx. (Mel.)* spp, with 17 from *Cx. pedroi* (8 eastern equine encephalitis [EEE] virus, 2 alphaviruses, probably EEE virus, and 7 not yet identified), 5 from *Cx. vormerifer* (1 Nepuyo [NEP], 1 Gumbo Limbo-type, 1 Group C, and 2 not yet identified), 4 from *Cx. ocosa* (1 Venezuelan equine

encephalitis, 2 NEP viruses, and 1 not yet identified), 1 from *Cx. portesi* (Guama Group), and 2 from *Cx. Cx. (Culex)* spp. (1 not yet identified), *Ae. hastatus* (western equine encephalitis [WEE]), *Ae. fulvus* (1 Bunyawera group and 1 not yet identified), *Ae. serratus* (1 alphavirus and 1 not yet identified), *Ps. ferox* (1 Mayaro-like, 1 Bunyawera group, and 1 not yet identified), *Ps. albigena* (3 alphaviruses), and *Limatus asulleptus* (1 Bunyaviridae and 1 possible EEE).

Mosquitoes from these collections were evaluated for their susceptibility to Venezuelan equine encephalitis (VEE), eastern equine encephalitis (EEE) and Nepuyo (NEP), viruses endemic to the area. *Ps. albigena* was observed to be highly susceptible to both EEE and VEE viruses. This is particularly important because *Ps. albigena* readily attacks man and may be partly responsible for disease outbreaks. Data on transmission rates for several species have been acquired. These data are being used to develop a risk assessment and to evaluate selected vector suppression measures.

The mortality rate for EEE is about 50% for those personnel who demonstrate disease. Additionally, those who survive EEE often suffer permanent neurological damage and require constant care. Whereas the mortality rates for WEE and VEE are much lower than for EEE, morbidity rates are higher. Currently, there is no approved vaccine for EEE, WEE or VEE. The morbidity/mortality of many of the bunyaviruses that have been isolated in Peru are not well known, although NEP is known to cause human illness. Some outbreaks of illness and deaths among Peruvian soldiers may be the result of bunyavirus infections.

The Walter Reed Biosystematics Unit has contributed greatly to our knowledge of vectors of human disease in the Amazon Basin. There are still many taxonomic problems to be resolved, especially since numerous vectors are only identified as "species" or as "near species." It is particularly important to be able to identify vectors of disease pathogens when developing threat analyses and vector and disease suppression strategies. --- LTC(P) T. A. Klein, MAJ J.W. Jones, CPT M. R. Sandalis.

PESTICIDES AND EQUIPMENT

New Products On the Market - Advantage Trap, Inc., has introduced two new products for the fly control market. One is the "Advantage Fly Trap" and the other is "Fly Banquet." These two in combination are used to attract and kill filth flies. The system is nonpesticidal, non-EPA regulated and does not require a pesticide applicator's license. This is a food-baited system suitable for outdoor use only. The bait "Fly Banquet" is placed inside the conical trap. Flies are attracted into the dual-entry fly trap but cannot escape. The traps are placed in areas where flies congregate, such as garbage collection points, barns, edges of picnic grounds or near latrines. The traps are packaged 6 per case at \$ 8.35 per trap. They are cleanable and reusable and should not need servicing more than once every two weeks. The "Fly Banquet" bait is nontoxic and comes in single-use packages. Baits are packed 250 per box for a total cost of \$ 420 a case (\$1.68 per use). For fly control in environmentally sensitive sites or where a nontoxic method is required, this may be your best choice. For further information contact Advantage Trap, Inc., 101 Westpark Blvd., Suite A., Columbia SC 29210 or call (803)561-1329 or (800) 561-0501, FAX (803)561-0506, Internet at <http://www.flyfact.com/>. The prices quoted are dealer prices so mention you are from the government.

Electrostatic Backpack Sprayer Tested – It has been known for some time that conventional spray application technology, using standard spray nozzles and relying on gravitational and inertial forces, may result in less than 50% mass transfer of insecticide to the desired target. Air-assisted electrostatic spraying (AES), which takes advantage of gravitational, moment, and electric force fields to achieve more effective insecticide deposition, has been used in agriculture for more than a decade. In this test, a Hudson PortaPak 6800 backpack sprayer was modified with an air-assisted electrostatic nozzle to determine its effectiveness in mosquito barrier control. Tests were conducted using the electrostatic nozzle and a standard nozzle. Results showed 100% greater insecticide deposition with the electrostatic nozzle. This relatively inexpensive modified backpack sprayer might be a time and money saver in areas of the world where barrier treatments are commonly used.----Journal of the American Mosquito Control Association 13(1): 90-91, March, 1997

Methyl Bromide on the WEB – All issues of "Methyl bromide alternatives" are available on the World Wide Web at

<http://www.ars.usda.gov/is/np/mba/mebrhp.htm>.

For those who may not know, "Methyl bromide alternatives" is a newsletter providing information on research for methyl bromide alternatives from USDA, universities, and industry. Additional information is also available at the USDA, ARS methyl bromide research homepage at



<http://www.ars.gov/is/mb/mebrweb.htm>----

Methyl bromide alternatives 3(2): 1, April 1997.

E-MAIL TRAIL

E-MAIL TRAIL.

This section contains excerpts of recent e-mail traffic, forwarded to the DPMIAC from various sources, that relate to interesting trends and developments in Medical Entomology or IPM. Entries are presented chronologically by category. In some cases, only summaries are presented in the interest of space. Contributions, suggestions and comments from our readership are welcome - COL Lawyer <lawyerpg@acq.osd.mil>

FIRE ANT CONTROL

July 8, 1997

Source: ARS News Service, Agricultural Research Service, USDA

Via: Tara Weaver, (301) 344-2824, tweaver@asrr.arsusda.gov

Subject: **Fly Release Latest Step in Fire Ant Biocontrol Strategy**

A Brazilian fly that dive-bombs fire ants will be released [9 July] as part of a new, environmentally friendly strategy to use natural enemies to control the ants that now infest millions of acres in the southern United States. Scientists with the Agricultural Research Service--the U.S. Department of Agriculture's chief scientific agency--will release several thousand phorid flies and parasitized ants at Gainesville's Kanapaha Gardens. Florida officials and USDA's Animal and Plant Health Inspection

Service have approved the release. The fly attacks only fire ants and poses no threat to any other insects, wildlife or humans.

"In these field tests, we want to demonstrate that these flies can help reduce fire ant populations," said Sanford Porter, an ARS entomologist in Gainesville. "The flies are effective in our quarantine laboratory, but we want to see how well they do in outdoor conditions."

Porter spent six months last year in Brazil studying the flies and fire ants in their native country. Known for their burning sting, fire ants are thought to have spread to the United States via contaminated ships from South America early in the 1930s. The ants now infest an estimated 278 million acres in 11 southern states and Puerto Rico. They have flourished in the United States because they have no natural enemies here.

Porter has been studying the parasitic flies under quarantine in Gainesville since 1994. The flies zero in on fire ants and pierce the pest's outer cuticle, then deposit an egg inside the ant. The egg eventually develops into a larva inside the ant, moves into the ant's head and causes the ant's head to fall off. The fly completes its development inside the fallen head. The fly is one of several biological controls for fire ants now under study at ARS' Center for Medical, Agricultural and Veterinary Entomology in Gainesville, according to David Williams. He is the lead scientist on the center's fire ant biological control research. Williams said two other possible biocontrols are:

-- *Thelohanias solenopsae*, a microsporidium discovered in Brazil in 1973. This organism infects fire ants with a slow-acting disease that chronically wastes and debilitates individual ants. The colony itself is weakened and eventually destroyed due to a lack of worker ants. In lab studies, Williams found that after 3 months, colonies infected with the microsporidium were smaller than healthy colonies.

-- *Solenopsis daguerrei*, a parasitic ant discovered in Argentina in 1930. This parasitic ant queen uses her mandibles to clamp onto a fire ant queen's body. "The parasitic ant is able to disguise herself from the fire ants; otherwise she'd be killed," Williams said. "She may somehow mimic the natural sex attractant of the fire ant colony." The fire ant queen becomes debilitated and lays fewer eggs, weakening the colony.

Porter and Williams said they're optimistic that the release of phorid flies and other natural enemies will eventually tip the ecological balance against fire ants in the United States and reduce their high populations here.

Scientific contact: Sanford D. Porter, Imported Fire Ant and Household Insects Research Unit, Agricultural Research Service, USDA, Gainesville, FL. 14565. Telephone: (352) 374-5914, fax (352)-374-5818) e-mail sdp@nervm.nerdc.ufl.edu

August 12, 1997

Source: Press release, University of California, San Diego 12-Aug-97; Media Contact: Warren R. Froelich, (619) 534-8564, wfroelic@ucsd.edu Mario Aguilera, (619) 534-7572, mcaguilera@ucsd.edu

Via: Ken Olds:
<ken_olds_at_chppm2__apgea@chppm-cmail.apgea.army.mil>

Subject: **A Replacement for Solenopsis?**

AGGRESSIVE ARGENTINE ANTS ARE WIPING OUT NATIVE ANTS, ANNOYING HOUSEHOLDS, FARMERS AND DISRUPTING ECOLOGY. In a classic ground war, hordes of Argentine ants are now on the march, from coastal California citrus groves to city kitchens, through suburban backyards and into nearby natural habitats.

Along the way, the invaders not only are annoying humans--who by their calls to exterminators have now elevated ants to the state's leading pest--they're also wiping out large populations of less aggressive and socially acceptable native ants, according to studies by biologists at the University of California, San Diego. Many of these home-grown ants are known to disperse native seeds; some also represent a food source for small mammals and lizards, including the coastal horned lizard, which dines almost exclusively on native ants. "When you lose these native ant species, which are responsible for dispersing seeds and they are food sources for other animal species such as horned lizards, the impact could be far more than losing just a few ant species," said Andrew Suarez, a doctoral student in



conservation biology at UCSD. "The results could be disastrous to an entire ecosystem."

Suarez, who along with UCSD biologist Ted Case has been studying the invasion and impact of the Argentinians, is presenting results of that research to the Ecological Society of America, meeting this week in Albuquerque, New Mexico. "Ants have risen from being a big urban pest to being a much bigger urban pest," said Case. "They've surpassed fleas and roaches in terms of calls to pest control agents. And, specifically, the Argentine ant has surpassed all these other pests."

Nationally, in regions that are hot and dry, the Argentinians do not appear to be a problem. Nor are they particularly threatening in colder, northern climates such as in Oregon or Washington. However, they've firmly established beachheads in California--from the San Francisco Bay area to the rivers and streams near Sacramento, and along the coast down to San Diego. The ants also are stirring up hostilities in some of the humid southeastern states, particularly Louisiana and Georgia. "As a pest the Argentine ant is much worse than native ants ever were," said Suarez.

Historically, the Argentine ant--formally known as *Linepithema humile*--first appeared in this country late last century in New Orleans. Researchers trace the ants' entry to California near Ontario in western San Bernardino County, where they then fanned out through the citrus groves of southern California and the San Francisco Bay area. Generally small (even for ants), the Argentinians nevertheless are quite prolific. Their colonies produce anywhere from 20 to 100 queens, each pumping out vast numbers of eggs that keep the colony growing and expanding. Throughout San Diego County, only two vast supercolonies of Argentinians have been identified, each colony likened to a country with multiple entrances or cities. "It's not thousands of colonies," said Suarez. "It's one colony, with thousands of entrances." Though Argentinians from competing supercolonies will do battle, within individual colonies these ants work in relative harmony, displaying little, if any, aggression toward each other. Argentine colonies, linked by underground tunnels, are highly mobile and organized, and can shift location throughout the year in response to environmental conditions, such as an increase or decrease in moisture.

By comparison, native colonies of ants are small and isolated, with individuals often seen squabbling and fighting among each other over food. The combination of large numbers, organization and discipline within the ranks has given the Argentinians a competitive edge in their war with the natives. Some species are particularly vulnerable, especially the harvester ant. Armies of Argentinians have been seen storming other ant hills, overwhelming their ineffectual enemies in vicious assaults that generally leave the vanquished in little pieces. "We can actually see them fighting," said Case. "And we've documented that when the Argentinians move in, the native ants disappear."

In their studies, the UCSD biologists have traced the spread of the Argentinians among 40 study sites, islands of natural habitat isolated from each other by various forms of urban development along coastal Southern California. In general, the researchers found that the invading ants are widespread throughout these habitats, particularly in those closest to human activities, such as farmland or moist backyards. In these areas, several species of native ants have been virtually wiped out, creating what the researchers call "local extinctions." The decimation of the natives could spell trouble for other species further up the food chain, including small mammals and lizards. The coastal horned lizard, for example, which thrives on harvester ants, finds Argentinians particularly unappetizing and will either move away or switch its diet to beetles if native ants aren't on the menu. To document their response to the invading Argentinians, the UCSD biologists have tagged these lizards with radio monitors to follow their movements. In fields invaded by Argentinians, the results show that the lizards will crowd into pockets where native ants remain. In areas dominated by Argentinians, the lizards leave. "The lizards will eat beetles and other things, but we don't know what that does to their growth rates," said Suarez. "Just the fact that we don't see the two overlapping suggests they don't do well there."

Local farmers also are worried. Aside from wiping out native ants, including the harvesters who are known as excellent seed spreaders, the Argentinians are known to cultivate another garden pest, the aphid. These insects, which suck the sap from the stems and leaves of plants, can create havoc with a variety of cash crops, such as tomatoes, citrus fruits, honeydew, and avocados. "Whenever Argentine ants are around, the aphid population grows,

disrupting other biological programs designed to chase off these insects,” said Suarez.

Suarez and Case said their future studies will include new surveys to track the movement of the Argentines, morphological and genetic studies to determine differences between competing supercolonies of the invaders and the natives, and potential ways to control the Argentines without using standard pesticides. “Pesticides are being used now,” said Suarez. “But in natural areas that’s not a good alternate, because pesticides don’t discriminate between native and exotic species. To find an alternative to pesticides, that’s one of our goals.”

RAT CONTROL

July 7, 1997

Source: Amanda Brown, PA News

Via: Ken Olds

<ken_olds_at_chppm2__apea@chppm-ccmail.apea.army.mil>

Subject: **Rat Boom Sparks Health Fears**

Summary: An exploding population of sewer rats is causing a major controversy in London and vicinity. The rats reportedly have chewed through plastic sewer pipes raising concerns that they might be able to gnaw their way through plastic water pipes, thus contaminating water supplies. Officials consider the fears bizarre, stating that water continues to test safe at the tap in millions of samples examined annually.

PESTICIDE MISUSE

July 11 1997

Source: GROUP PRESS 202-260-4355

<PRESS@epamail.epa.gov>

Via: Ken Olds

<ken_olds_at_chppm2__apea@chppm-ccmail.apea.army.mil>

Subject: **Mississippi Man Sentenced in Pesticide Case**

A Mississippi man was sentenced on July 7 to six years and six months in prison in U.S. District Court in Biloxi, MS., for his conviction on 45 counts of spraying the pesticide methyl parathion without a license and three counts of illegally distributing

methyl parathion in violation of the Federal Insecticide, Fungicide and Rodenticide Act. This sentence is the longest U.S. federal prison term ever for an environmental crime. The convicted man did not possess a license for the commercial application of pesticides in Pascagoula, MS., and had been denied permission for application by a Mississippi state court. A co-defendant received a sentence of five years and three months for his conviction on 21 counts of illegal pesticide application. Methyl parathion is approved only for outdoor agricultural use in uninhabited fields. Human exposure to methyl parathion can produce convulsions, coma and death. This case was investigated by EPA’s Criminal Investigation Division, the FBI and authorities from the State of Mississippi.

DENGUE

July 11 1997

Source: Prof. S.K. Lam Sai Kit, Director, WHO Collaborating Centre (DF/DHF)

<lamsk@medicine.med.um.edu.my>

Via: promed@usa.healthnet.org

Subject: **Dengue/DHF - Malaysia**

Cases of dengue and dengue haemorrhagic fever for the first six months of 1997 have increased 118% compared to the corresponding period last year. Through June 28, health authorities nationwide were notified of 9,151 cases, with 22 deaths.

The viruses responsible are mainly dengue-1 followed by dengue-2 with very few cases of dengue-3. Dengue-1 was the predominant virus in 1987 and 1988 and dengue-2 was active between 1989 and 1991.

From 1 January to 28 June 1997, 86 cases of DHF/DSS [dengue hemorrhagic fever/dengue shock syndrome] were confirmed by the WHO Collaborating Centre for DF/DHF. For the same period last year, only 31 severe cases were diagnosed by the WHO Centre. 10% of the severe cases this year showed CNS manifestations, including fits, epilepsy, meningitis and encephalitis.

A case of vertical transmission has been confirmed this season. Last year, there were two such cases, one of which resulted in the death of an infant who

developed respiratory distress and a large, uncontrollable left intracerebral bleed. The child expired at day 6 of life from multiorgan failure. Dengue- 2 virus was isolated from this fatal case.

Based on previous epidemiological patterns, it is expected that the outbreak will peak in the next few weeks. The WHO Centre has alerted clinicians to the possibility of these unusual presentations and to monitor their patients closely.

The whole nation has been put on alert and aggressive integrated control programmes have been taken by the respective ministries and agencies.

HANTAVIRUS

July 22, 1997

Source: Source: Health I.G. Buenos Aires
<http://www.healthig.com>
Via: ProMED-mail <promed@usa.healthnet.org>
PRO/AH>
Subject: **Hantavirus: Person-to-Person Transmission Confirmed**

Dr. Paula Padula, Chief of the Virology Department of the Carlos Malbran Institute of Microbiology, has confirmed the existence of a chain of interhuman transmission during the hantavirus outbreak in Argentina from September to December 1996. Nucleic acid analyses of the 26 cases showed that in 16 of them the strain of Andes virus was identical. Those included 10 cases in El Bolson, 4 in Bariloche and 2 in Buenos Aires. Five of that group were physicians. These findings will be presented at the International Congress on Emerging Viruses in Ireland, September 1997.

According to Dr. Padula, the four people who died in Bariloche were not infected by a rodent, but by person-to-person transmission. It is still not known whether the contagion was airborne or through body fluids. Evidently the primary reservoir of the disease is the rodent, and the human chain of infection dies out.

MALARIA

July 23, 1997

Source: Source: All Africa Press Service, Africa News Online <<http://www.africanews.org>>
Via: ProMED-mail <promed@usa.healthnet.org>
Subject: **Malaria - Uganda, Kenya**

Hundreds of people have died in Uganda and neighboring Kenya following an outbreak of highland malaria, so called because it periodically sweeps through the highlands of western Kenya, which are not endemic malaria areas. The worst outbreak is reported in West Pokot District where the medical officer of health, Gideon Torom, put the number of cases at 18,000 of whom more than 100 have died. Ortum Mission Hospital was crowded with malaria cases and Dr. Torom appealed to residents to report to hospital immediately instead of treating malaria cases with traditional herbs.

In Uasin Gishu District, the District Commissioner, Eliud Parsankul, declared an anti-malaria campaign and mobilized health and other government staff "to cope with this menace." More than 350 patients had been admitted in various hospitals within the district and the D.C. said he had mobilized government vehicles to conduct mobile clinics in remote areas of the district.

In Uganda's Kapchorwa district, about 150 people are reported dead due to malaria. The district Medical Officer of Health, Dr. Richard Okech, confirmed an increase in malaria cases and attributed the deaths to patients in rural communities reporting late to hospitals or taking under dosage of drugs.

The Kenya Medical Association (KMA) Chairman blamed inefficiency in the Ministry of Health for an upsurge in malaria cases. Dr. Khama Rogo said public services, particularly environmental and sanitary health aspects "were almost nonexistent in Kenya and had completely compromised the country's ability to control malaria." Researchers at the Kenya Medical Research Institute (KEMRI) have been studying highland malaria outbreaks for over ten years. They blame the high incidences of the disease on a number of factors, including post-famine suppression of immune systems of individuals in Kenya's western highlands, due to inadequate nutrition following a period of prolonged food shortages. The doctors' drug of choice is quinine.

MURINE TYPHUS

July 22, 1997

Source: Los Angeles Times, July 19, 1997]
Via: ProMED-mail <promed@usa.healthnet.org>
Subject: **Murine Typhus - California, USA**
(Pasadena)

Two cases of endemic typhus (caused by *Rickettsia typhi*) have been reported in Los Angeles County, public health officials said Friday. The ailment was found in two otherwise healthy young males from the Pasadena area. Both recovered. These are the first cases this year. Typhus is characterized by fever, headache, muscle aches and rash, and it is treatable with antibiotics. There have been 70 cases reported county-wide since 1993, with most occurring in the summer and transmitted to humans by fleas from rats or opossums. Residents can help prevent disease transmission by trimming ivy, ground cover and other vegetation, which harbors rodents; and pet owners should keep domestic animals free of fleas and avoid leaving uneaten pet food where it can attract wild animals.

For information regarding medical symptoms or treatment contact the county
Disease Control Unit at (213) 240-7941.

In a related note from Jonathan Trouern-Trend,
American Red Cross <jtrend@erols.com>, dated
Mon, 21 Jul 1997 10:21:18 -0700:

Epidemic typhus is transmitted by body lice and involves a different agent (*Rickettsia prowazekii*). Health officials said two men in their 20s, living in Pasadena and South Pasadena, came down last month with the illness, whose symptoms include severe headaches, high fever, muscle aches and rash. Both men were treated with antibiotics and recovered. Seventy cases of epidemic typhus have been reported in Los Angeles County since 1993, an increase over previous years. It is unknown whether the rise was a result of more instances of the illness or better reporting.

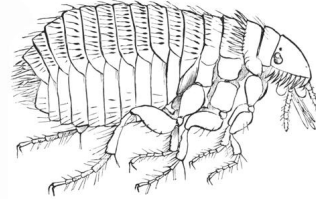
PLAGUE

July 11 1997

Source: newsmedia report, 10 July 1977

Via: ProMED-mail <promed@usa.healthnet.org>
Subject: **Plague - USA**

Two people [who] died from human plague last year were likely infected by prairie dogs. These deaths are among the five cases reported by the Centers for Disease Control and Prevention (CDC) in 1996. An 18-year-old man from Flagstaff, AZ was bitten by fleas while walking through a colony of prairie dogs in the northeast part of the state. The same month, a



16-year-old Colorado girl contracted the plague. It is reported that she lived near an area where many prairie

dogs had died. The CDC believes she got the plague from her cat, who became infected from the prairie dogs. Cats can get infected from fleas or rodents and pass it on when they bite, scratch or lick humans. Human plague can be treated with antibiotics if treatment is begun early enough. There have been 390 cases of human plague in the United States since 1947, resulting in 60 deaths. Most of the cases are from Arizona, California, Colorado and New Mexico.

ROSS RIVER VIRUS

July 19, 1997

Source: Linda Hueston
<lindah@CIDM.WSAHS.NSW.GOV.AU>
Via: ProMED-mail <promed@usa.healthnet.org>
Subject: **Ross River Virus, Military Exercises - Australia**

Report from: Linda Hueston 1, Alan Yund 2,3, Stanton Cope 2,3, Marshall Monteville 2,3, Marie Marchetti 1, John Haniotis 4, John Clancy 4, Stephen Doggett 4, Richard C. Russell 4, Dominic E. Dwyer 1 and Gregg Parker 5.

1. Arbovirus & Emerging Disease Unit, Virology Department, Centre for Infectious Diseases and Microbiology Laboratories. Institute of Clinical Pathology & Medical Research. Westmead Hospital, Westmead, New South Wales 2145.

2. Deployed Public Health Laboratory, Camp Samuel Hill, Exercise TANDEM THRUST 97.

3. Navy Environmental and Preventive Medicine
Unit No. 6, Box 112, Pearl Harbor, Hawaii, 96860.

4. Medical Entomology, Centre for Infectious
Diseases and Microbiology Laboratories. Institute of
Clinical Pathology & Medical Research & the
University of Sydney, Westmead Hospital,
Westmead, NSW 2145.

5. Fleet Surgeon, United States Navy Seventh Fleet,
PSC 473 Box 722, FPO AP 96349-5555

In support of a large, combined Australian-United States military exercise at Shoalwater Bay in southeastern Queensland this past March (TANDEM THRUST 97), the U.S. Navy sent the Deployed Public Health Laboratory (DPHL) into the field with the forces. The purpose was to provide preventive medicine support as well as disease and vector surveillance. Among the numerous potential threats to the health of the troops was Ross River virus (RRV), to which very few of the U.S. personnel would have been previously exposed.

Personnel were educated in protective measures against mosquitoes before the exercise. As troops were to be living in field conditions during the RRV transmission season, some cases were expected, particularly in those personnel remaining in the training area for six weeks, thereby increasing exposure potential.

Of 19 suspected clinical cases, six were diagnosed serologically by the DPHL using [capture? - Mod] enzyme-linked immunosorbent assay (ELISA) techniques. Samples were forwarded to the Arbovirus Unit at the Institute of Clinical Pathology & Medical Research (ICPMR), Westmead, for virus isolation and confirmation of the serologic tests. Four cases demonstrated four-fold or greater increase in neutralizing antibody titre; the other two cases demonstrated seroconversion by neutralization. RRV was isolated from the acute phase samples in these two cases. These are the first reports of RRV isolation from humans in 1997.

Mosquitoes were collected in the area during the exercise and these were forwarded to the Department of Medical Entomology, ICPMR for species identification and arbovirus isolation. Almost 40,000 mosquitoes have been processed; at least 40 species have been identified, with *Aedes vigilax* and *Culex annulirostris* the most abundant. To date,

RRV has been isolated from pools of *Ae. vigilax*, *Ae. funereus*, *Ae. procax* and *Cx. annulirostris*.

A large-scale post-deployment serosurvey is currently underway to establish whether inapparent RRV infections occurred during the exercises. The final results of these studies will be formally published elsewhere when available.

TRYPANOSOMIASIS

July 24, 1997

Source: James C. McKinley, New York Times (July 18, 1997)

Via: ProMED-mail <promed@usa.healthnet.org>

Subject: **Trypanosomiasis, African - Sudan**

In 1990, guerrilla forces in the southern Sudan moved west towards the Zaire (now Dem.Rep.Congo) border. All health services closed down and thousands of people fled into Zaire and the Central African Republic, into areas infested with the tsetse fly, which carries sleeping sickness. In 1994, CARE and other charities restarted health services. In Tambura, Sudan, the number of cases seen was 18 in 1995, 87 in 1996 and more than 100 already this year. In April 1997 a team from CDC Atlanta carried out a study and found that 37% of 440 people tested in Ezo (pop. 8000) are infected, and 21% of the 21,500 people in the surrounding area.

The disease can be cured, but a course of the drug Pentamidine costs anywhere from \$170-\$500, and a follow-up drug, Melarsoprol, costs \$100 per patient. Just to treat the estimated 3000 people in Tambura County who are estimated to be infected would cost more than \$1 million. Then there are all those infected people across the border. A regional control program is needed.

YELLOW FEVER

July 29, 1997

Source: El Comercio of Quito (July 29)

Via: Abramo Ottolenghi <ottolenghi.1@osu.edu>;

ProMED-mail <promed@usa.healthnet.org>

Subject: **Yellow Fever, Military - Ecuador**

According to El Comercio of Quito (July 29), 27 soldiers from garrisons in the Province of Pastaza have been admitted to the Military Hospital in Quito with symptoms of yellow fever. Four soldiers with similar symptoms have died.

Four soldiers have died of yellow fever in the third outbreak of the disease during the last few months in camps of the Ecuadorian army. Yesterday, 27 soldiers entered the Military Hospital of Quito presumably infected with yellow fever. The soldiers came from the Amazonian garrisons of Lorocachi and Montalvo in Province of Pastaza. The four dead soldiers all came from the same garrisons. According to the Minister of Health, all shared indications of yellow fever as transmitted by insect bite.

INFECTIOUS DISEASES

July 23, 1997

Source: Los Tiempos, Cochabamba, Bolivia, 22 July 1997

Via: ProMED-mail <promed@usa.healthnet.org>

Via: Dave Coder <dcoder@u.washington.edu>

Subject: **Infectious diseases - Bolivia (Cochabamba)**

Rabies, animal: According to a report by the Directorate of the Department of Health, in Cochabamba during the first half of the year, 91 cases of rabies were reported in dogs and cats. In addition, an average of 15 cases a month are reported. With the goal of avoiding an increase in rabies, the Health Unit carried out a vaccination campaign that included 106,972 dogs and cats.

Dr. Efrain Vallejo, Chief of the Vectors and Zoonoses Unit, released a report on the work in controlling various diseases during the first half of the year in different parts of the city as well as the tropical area of the provinces of Valle Alto y Bajo of Cochabamba.

Malaria: In the first half of this year, 1,191 cases have been reported. "The number does not represent 100% of the data reported, but only accounts for about 50% of what the Malaria Program actually finds in the course of reporting cases little by little among the townships," according to Dr. Vallejo. He reported that there are towns at high risk such as

Villa Tunari (336 cases), Toro (north of Potosi) (260), Aiquile (116), Vila Vila (93), Anzaldo (63), Pojo (Valle) (48), Puerto Villarroel (41), Mizque (36), Shinahota (29), and Omereque (27).

Leishmaniasis: In the tropical area of Cochabamba a total of 31 cases has been reported this year. They were diagnosed and treated with the help of the Panamerican Health Organization and the University Center for Tropical Medicine of the Faculty of Medicine of the University of San Simon. The cases are mostly from the towns of Rio Pojo (Entre Rios), Villa Tunari and Puerto Villarroel, but they are coming also from Chapare and Carrasoco Tropical.

Yellow fever: Since January, 42 cases with 80% mortality have been reported. Most of the patients are from the tropical regions or came into the area to escape being vaccinated [apparently, successfully -- Mod CHC]. The Department of Health completed a vaccination program during the first half of the year that included 81,000 individuals.

Chagas' disease: No statistics of incidence of disease were reported, but an extensive eradication program is being carried out.

MISCELLANEOUS

July 21, 1997

Source: FSNET (Fsnet is produced by researchers at the Science and Society Project, University of Guelph, and is supported by the Ontario Ministry of Agriculture, Food and Rural Affairs, Health, the U.S. National Food Processors Association, the U.S. National Pork Producers, AGCare (Agricultural Groups Concerned About Resources and the Environment), Monsanto, Canada, Hedley Technologies Inc., Ag-West Biotech Inc., Qualicon, L.L.C., DeKalb Canada Inc., Pioneer Hi-Bred Limited (Canada), Novartis Crop Protection, Canada, and the Ontario Soybean Growers Marketing Board.

Via: Ken Olds

<ken_olds_at_chppm2_apgea@chppm-ccmail.apgea.army.mil>

Subject: **Miscellaneous**

USE CAUTION WHEN REMOVING MOUSE DROPPINGS - WASHINGTON STATE Department of Health July 18, 1997 (from a press release)

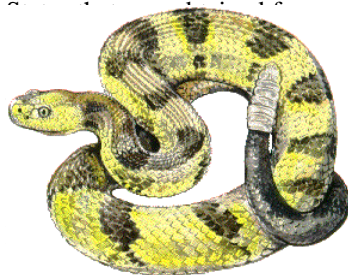
OLYMPIA, Wash. -- Although hantavirus was reported in King and Klickitat counties this week, the disease is rare and can be prevented, state health officials announced today. Hantavirus is a severe respiratory illness that is spread to humans by infected deer mice. About 40 percent of people who contract the virus die. In Klickitat County, a 52 year-old man contracted the virus while vacuuming a mouse nest and droppings from a storage area in a windowseat. He was hospitalized in Vancouver and is recovering from the illness. In King County, a 23 year-old man died of the illness July 8. Investigators now are trying to determine how the man was exposed. Distinguished from other mice by their white bellies and furry tails, deer mice live in all parts of the state but are most common in rural areas. Infected deer mice spread hantavirus in their urine, saliva and feces. People contract the virus when they inhale dust after disturbing nests, or breathe in closed spaces inhabited by infected mice. "Finding a deer mouse in or around your home does not mean the family is at significant risk for hantavirus," said John Grendon, a veterinarian at Department of Health. "It is an early warning sign that rodent proofing of the home is needed to keep all rodents out." Department of Health participated in testing of 63 deer mice for hantavirus in 14 counties. Positive mice were found in 10 counties in both eastern and western parts of the state. About 11 percent of deer mice tested have been positive, which is similar to the 12 percent positive in other western states. Grendon said that these are tests of rodent communities, not whole populations. "Since you can't tell by looking at them which mice are positive, assume they all are. Be careful if you find mice in your home, workplace or recreational areas," Grendon said. "Wear a dust mask when cleaning an area that's been closed up, and don't vacuum, sweep or dust. Instead, use rags, sponges and mops that have been soaked with bleach or disinfectant." These precautions will prevent hantavirus as well as other human illness spread by rodents. To date, 14 cases of hantavirus have been confirmed in Washington; seven were fatal. This year there have been three cases, one each in Adams, King and Klickitat counties. Last year there were single cases in four counties: Snohomish, Franklin, Lewis and Lincoln. In 1995 there were four cases - one in Yakima County, two in Stevens County, and one in Grant County. One Lincoln County case that occurred in 1985 was confirmed in 1994. Also in 1994, there was a case in Lewis County that occurred out of state and one in Adams County.

WORM RUINED SEX LIFE, COURT TOLD July 14, 1997 Kitchener-Waterloo Record A2--According to this brief, a Winnipeg woman who nearly swallowed a worm in strawberry yogurt is now suffering from a depressed sex drive as a result and is suing a grocery chain for negligence. Rimma Trojan alleges that the Safeway chain that sold the strawberry yogurt was negligent in not ensuring that the yogurt was worm free or at least had warning labels. The grocery chain has not issued a statement.

LYME DISEASE REINFECTION CAN OCCUR July 21, 1997 ABC News NEW YORK (Reuters) -- A report by researchers at New York Medical College and the Lyme Disease Diagnostic Center in Valhalla, New York in the July 15 issue of the Annals of Internal Medicine cited here reports that it is possible to be reinfected with *Borrelia burgdorferi*, the spirochete that causes Lyme disease.

FDA/CDC WARN AGAINST BLOOD DONATIONS BY THOSE POSSIBLY EXPOSED TO TICK-BORNE ILLNESSES July 18, 1997 FDA HHS NEWS--As a precautionary measure, The Food and Drug Administration (FDA) and the U.S. Centers for Disease Control and Prevention (CDC) are advising that individuals who underwent training at the Fort Chaffee, AR military base during the months of April through June 1997 and have subsequently donated blood or plasma within four weeks after leaving the base should immediately notify the blood or plasma establishment where the donation occurred. These establishments need to be informed that these National Guardsmen may have been exposed to tick-borne pathogens which could possibly be transmitted through blood transfusion. If notified, blood establishments should take immediate steps to retrieve the potentially affected blood and blood components intended for transfusion. CDC and FDA will continue to actively monitor the situation. In addition, both agencies are renewing their warning that all individuals who underwent training at this facility during the months of April through June 1997 should not donate blood within four weeks of their departure. Earlier this month certain blood products collected at Fort Chaffee were recalled from six states as a precautionary measure because donors of these products may have been exposed to tick-borne pathogens. To date, CDC has serologically confirmed Rocky Mountain spotted fever in one ill guardsman and has preliminary results of additional infections by spotted fever *Rickettsia* and *Ehrlichia* in guardsmen who returned from Fort Chaffee. Subsequent evaluation of this

incident by CDC and FDA has revealed that on at least four occasions individuals who might have been exposed to these tick[-borne] diseases during training at Fort Chaffee donated blood at other establishments. The likelihood that an individual who has received a transfusion recently in the United



ie of these National DC does not have sons who received d Guardsmen that tick-borne illness. ort any adverse ducts to MedWatch, m, at 1-800-FDA-

NATURAL RESOURCES

Endangered Species - "The U.S. Navy leases approximately two-thirds of the island of Tinian for military training exercises. This area supports several species of wildlife that are federally or locally listed as threatened or endangered, many of which are endemic to the area. The Fish and Wildlife Service has completed a 16-month research effort on the threatened and endangered species of Tinian to assist the Navy in minimizing impacts on these species from military activities. Prior to this study, very little was known about the distribution, abundance, nesting, foraging patterns, seasonal movements, and habitat use of these species on Tinian. Results of the study have shown that Navy leasing of the area has been beneficial to most of the species due to regrowth of the native forest canopy."

When training exercises are held on Tinian, Guam serves as a major staging area for vehicles, equipment, supplies and personnel. Animal Damage Control, under DoD contract to prevent the accidental shipment of brown tree snakes, supports these exercises through trapping and detector dogs to ensure that no brown tree snakes get to Tinian. ---- Endangered Species Bulletin Vol. XXII No. 3 May/June 1997.

Seeking an Accord with Rattlesnakes . - "The fear many people have of timber rattlesnakes, *Crotalus horridus*, is simple: it is the fear of being poisoned. But how dangerous is this species to people? Unlike some other rattlesnake species, the timber rattler has a docile manner, and it will seldom strike unless stepped on or directly provoked. When the snakes

are encountered in the wild, it is easy to give them the right of way, leave them alone, and keep out of their striking range. The rare deaths attributed to the timber rattlesnake usually have resulted from individuals picking up snakes when intoxicated or handling snakes for religious purposes and refusing treatment for bites. In such cases, death could probably have been avoided if timely medical treatment had been obtained. Like all species, the timber rattlesnake has an ecological role to play, and ensuring the future of this fascinating creature poses little risk to the people who share its remaining range."

A group of rattlesnake experts will develop a Timber Rattlesnake Conservation Action Plan to identify the problems and conservation needs for each of the 27 states with upland timber rattlesnake populations. The timber rattlesnake is not considered a candidate for Federal listing under the Endangered Species Act, and successful implementation of this plan may obviate the need for listing in the future. ---- Endangered Species Bulletin Vol. XXII No. 3 May/June 1997.

An Integrated Approach Helps Manage Weeds in Nurseries. - In Connecticut, mulches and cover crops, that suppress weed growth, conserve soil moisture, and prevent soil erosion are being suggested for employment along with herbicides to control weeds in nurseries. If commercial agriculture can find ways to be less reliant on chemicals to control pest problems, then surely with some imagination each of us, as we deal with pest problems, can find ways to reduce our personal reliance on pesticides. Frontiers of Plant Science, Fall 1996, Vol 49 No.1, The Connecticut Agricultural Experimental Station.

Pesticides and Bird Mortality Workshop. - On August 6, Dr. Egan attended a meeting held at the Patuxent Wildlife Research Center, Laurel, MD. The meeting was sponsored by the U.S. Fish and Wildlife Service (F&WS) and the American Bird Conservancy. The purposes of the meeting were: 1. Through presentations and field exercises, provide an overview of causes and legal implications of bird poisonings from pesticides. 2. Discuss approaches to alleviate widespread mortality of birds from pesticides. 3. Delineate the principal pesticides responsible for bird mortalities. 4. Discuss the role of conservation groups in addressing wildlife kills from pesticides. Lynda Lyon, one of the presenters at the

Workshop and the F&WS liaison representative to the AFPMB, has provided us with a list of pesticides as well as information regarding pesticides and bird mortality. Individuals desiring this information should check the item on the back page of this TIB and send it to the AFPMB. ---- Dr. Pete Egan.

Non-Native Invasive Species (NIS) - At the request of the White House, the AFPMB is participating in a task force of federal agency representatives drawn principally from the Departments of Agriculture, Interior, Commerce and DoD to draft a Federal Strategy on NIS. Many of the plants we call weeds and a number of animals, such as the brown tree snake, zebra mussel, Asian long-horned beetle, Japanese beetle, and gypsy moth, are non-natives that constitute much of our pest management effort within DoD. The hope of this strategy is to gain support for a coordinated federal effort, partnered with state and non-governmental agencies, to deal with the impact of these species. The thrust will be prevention, control/restoration, and public awareness.

Snake Guard: This is a flat cardboard box with a sticky surface, much like a larger version of a cockroach trap, that is supposed to be effective in catching snakes. Wildlife Services, formerly Animal Damage Control, has acquired some of these traps for contingency operations. I have yet to meet anyone who has actually used Snake Guards, but I have a few examples on hand for those interested in trying them out. Contact the company at Snake Guard, Hillside Drive, Maylene, AL 35114, or phone 205-664-3407. Please let us hear about your experiences ---- Pete Egan.

TIB BITS

Reserve Strength Heading South - According to the DoD *Report of the Quadrennial Defense Review*, Army Reserve strength will be reduced from 582,000 today to 575,000 in FY2003. When reductions are complete, the Army Reserve components will have been reduced 32% from Cold War levels, compared with a 38% reduction in the active Army. The stated aim in taking these cuts is to preserve critical combat capabilities of our military forces - “the tooth” - while reducing infrastructure and support activities—“the tail.” Army medical entomologists are a critical part of “the tail” that keeps the “tooth” biting (by preventing arthropod-borne diseases).

Vector control and use of personal protective measures are proven force multipliers that can influence the outcome of battles and wars. There are currently 16 Army Reserve entomologists “on the books.” As Medical Entomologist Consultant to the Army Surgeon General, COL Phillip Lawyer (also the Chief, Defense Pest Management Information Analysis Center) will continue to “lobby” for sustained medical entomology strength in the Army Reserves.---COL Harvey Shultz (USAR), DPMIAC

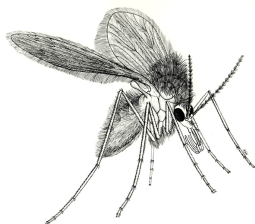
Attention “Dengue Deleters” - Have you noticed that Ken Olds’ CHPPM all-DoD-entomology e-mails are predominantly about medical entomology subjects? Well, Ken would like you to know that contributions from engineer-side entomologists (you know, the ones who worry about facilities, public works, compliance evaluations, pesticide-use reduction, pest management plans, contracts, grounds, golf courses, stored products pests, wood-decaying organisms, etc., etc., etc.—you get the point) are not only welcome, but encouraged. So if DoD is paying you to do non-medical entomology work, send your success stories, lessons learned and unsolved challenges to Ken. That way the mosquito-chasers will have something to delete also.---COL Harvey Shultz (USAR), DPMIAC

Transgenic Technology Reviewed - What if you could manipulate the genome of an insect disease vector, say *Anopheles gambiae*, to eliminate the mosquito or render it unable to transmit a pathogen, say *Plasmodium falciparum*. The genetically engineered mosquito strain would then replace field strains, resulting in a new population refractory to *P. falciparum*. This is speculative, long-range thinking that some feel has a low probability of success. But the possibility of such an exquisite solution to the control of vectors of devastating human diseases has been too tantalizing to ignore. O’Brochta and Atkinson reviewed recent developments in transgenic insect technology in *Parasitology Today*, vol. 13, no. 3, 1997. To date, only *Drosophila melanogaster* and a few other closely related species can be routinely transformed. The problem in other target species has been the identification of transposable elements or viruses that are mobile. Mobile genetic elements would become platforms upon which to construct effective gene vectors, gene-tagging agents, and enhance traps. There have been some recent breakthroughs, and assuming safety is eliminated as an issue, the potential of insect gene-

transfer could be realized.---COL Harvey Shultz (USAR), DPMIAC

Genetic Studies Offer Hope for Control of

Leishmaniasis - You know the deal about leishmaniasis: protozoans transmitted in the tropics by sand flies that kill by attacking internal organs or disfigure by destroying the mucosa of the mouth,



nose, and throat. Since there are no vaccines or chemotherapies, genetic approaches have been emphasized in the search for improved treatment. But genetic analysis of the flagellates has been

hindered because they are diploid and either have no sexual cycle or have one that is experimentally intractable. But now, according to Gueiros-Fihlo and Beverly in the June issue of *Science*, the transposable element (piece of DNA that can move from place to place in the genome) *mariner* may be the key to genetic studies in *Leishmania major*. *Mariner* turns out to be an accidentally appropriate name for this transposable element, since it is phylogenetically the most widely distributed in animals (being found in *Planaria*, nematodes, centipedes, insects, and humans). *Mariner* can transpose efficiently in *Leishmania* and has been used as an insertional mutagen and to trap new *Leishmania* genes.---COL Harvey Shultz (USAR), DPMIAC

Navy-Marine Corps Bird-Aircraft Strike

Clarification - In the March/April TIB, we reported that the Navy and Marine Corps experienced 105 bird-aircraft strikes from 1986 to 1995. Actually, these strikes represented only the most serious statistical category of incidents (those resulting in severe damage, injury, or death). Over 700 other less serious bird-aircraft strikes were documented annually during this time period. These strikes also have serious implications, with many resulting in aborted missions, boroscoping of engines, and repairs. Working together, Pest Management Professionals and Natural Resources Managers assigned at Naval Facilities Engineering Command Field Divisions or Activities are available to develop or update installation Bird Aircraft Strike Hazard (BASH) Plans.---COL Harvey Shultz (USAR), DPMIAC

New Lyme Disease Journal - The Lyme Disease Foundation has introduced its "*Journal of*

Spirochetal and Tick-Borne Diseases" For more information, contact the Managing Editor of JSTD at LDF, 1Financial Plaza, Hartford, CT 06103---COL Harvey Shultz (USAR), DPMIAC

Wild and Crazy Ants Invade Cuba - A report from Cuba indicates that a large, red, difficult-to-control predatory ant, *Paratrechina fulva*, is wiping out other ants and land crabs and is capable of attacking beehives, lizards, pigs and chickens. It is also damaging coconut trees. In some houses treated with chemicals, dead ants have been collected by the pail full. The origin of these ants is unknown, but there is information to suggest that they might have been used experimentally to fight sugar cane stalk-borer.---COL Harvey Shultz (USAR), DPMIAC

Ent. Soc. Recognizes Urban Entomologists -

Members of the Entomological Society of America are voting on a change that would revise the name of the Crop Protection Entomology Section to the Crop and Urban Pest Management Section. This action would give many DoD Pest Management Professionals a "home" (or at least a share of the "duplex") in their own society for the first time.---COL Harvey Shultz (USAR), DPMIAC

Dengue Web-Site - Run by Dr. A.B. Knudsen at CTD/WHO; Email <knudsen@who.ch>., the dengue fever (DF) and dengue hemorrhagic fever (DHF) web-site can be accessed at:

<<http://www.who.ch/orgrammes/ctd/act/dengprev.htm>>.---COL Harvey Shultz (USAR), DPMIAC

Poison Ivy Preventive - FDA has approved bentoquatam 5% (Ivy Block) as an over-the-counter drug to protect people from allergic reactions to poison ivy, sumac, or oak. A product of Enviroderm, Louisville, KY, it is a clay-like medium designed for application to the skin before anticipated exposure.--COL Harvey Shultz (USAR), DPMIAC

100 Years Ago . . .

...Sir Ronald Ross discovered that the mosquito is the vector of malaria;
and

...Masanori Ogata (remember him?) implicated rat fleas in the bubonic plague cycle.

50 Years Ago . . .

...(can you believe this one) one of the granddaddies of environmental regulation, the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) was signed into law.---COL Harvey Shultz (USAR), DPMIAC

The Hidden Cost of Malaria - An economic study in a village in Sri Lanka where 2/3 of the people had malaria indicated that almost 2% of working days were lost by the economically active group (14-60 year-olds) depriving them of 6% of their annual income. As might be expected, they lost another 5% of their working days and another 18% of their annual income to other illnesses. Kids, not included in the economic study, lost 10% of their school days due to malaria.---COL Harvey Shultz (USAR), DPMIAC

“Why Mosquitoes Suck” - ...is the enchanting title of a *Discover* magazine article published in August and is DPMIAC’s pick-of-the-month for light entomological reading. Just make sure you don’t eat before you read it. Some sample text: “...sucks from the hemorrhage, pumping in little spitballs of vessel dilators and blood thinners to keep its meal running freely. (An allergic reaction to mosquito drool is what produces those itchy red lumps, if you’ve wondered.)” We haven’t. The descriptions get even more disgusting but also - we must admit - make consummate scientific sense. We did enjoy the description of male mosquito feeding—”peacefully sipping at nature’s juice bar.” Some very interesting theories are presented to explain why mosquitoes prefer some human hosts to others. We won’t get into the discussion of the similarity between human foot odor and Limburger cheese. After all, this is a newsletter you should be able to leave lying around at home where small children may pick it up. But one line will get us out of this review with a chuckle: “for mosquitoes the human vapor trail is a no-brainer. It says: Fly this way. Make a right. Just do it.”---COL Harvey Shultz (USAR), DPMIAC

Don’t Be Tricked - We are more than a little upset with the *Army Times* July 28 cover story entitled *Field Tricks*. The author provides tips for soldiers on staying warm, dry, clean, hydrated, etc. In a section called *Beating the Bugs* he provides a compendium of myths, old-wive’s tales and other pest control misinformation. Some examples: “Skin-So-Soft bath oil makes a great bug repellent.” “Products with concentrations [of DEET] above 30 percent should not be used on bare skin...” [The military skin repellent contains 33% DEET.]

“When ticks dig into your skin, they attach themselves in a clockwise motion...pulling it from the skin straight up with a counter-clockwise twist, a tick will come out clean. Others like to use a still-hot match head...”. Needless to say, the AFPMB has asked the *Army Times*, an independent paper not affiliated with the Army, for equal time. We hope to set the record straight on “beating the bugs” in an upcoming issue.---COL Harvey Shultz (USAR), DPMIAC

WRAIR Scientists Determine that DEET Breaks Down Sunscreen - Thank you Montemarano, (MAJ Raj) Gupta and Klein for confirming (in the prestigious *Lancet*) what we should have suspected all along: the solvent action of diethyltoluamide skin repellent decreases the SPF of sunscreen by about 1/3. So don’t forget your hat when both the sun and the mosquitoes are out.---COL Harvey Shultz (USAR), DPMIAC

TIB BYTES

Extraordinary Cyber-Dragonfly Images - A gallery of dragonfly pictures preserved on the



Internet (<http://www.our-town.com/dragonfly/Welcome.html>) has been described by insect photographer Thomas Eisner as “extraordinary.”--

-COL Harvey Shultz (USAR), DPMIAC

Internet Access for DoD Environmental Security Professionals - A memorandum, dated June 26, 1997 and signed by Ms. Sherry W. Goodman, Deputy Under Secretary of Defense (Environmental Security), calls for the elimination of various barriers to DoD environmental security professionals’ achieving internet access. This memorandum bases the push for internet access on the National Performance Review’s advocacy of the development of performance-based organizations within the Federal government. One of the keys to achieving this is use of the World Wide Web’s information exchange capabilities by all military and civilian personnel, including DoD environmental security professionals. A copy of this memorandum can be found on DENIX at “<http://denix.cecr.army.mil/denix/Public/News/DUSDES/Memos/access.html>”.

DoD ESOH World Wide Web Home Pages and DENIX - A memorandum, dated June 26, 1997 and signed by Ms. Sherry W. Goodman, Deputy Under Secretary of Defense (Environmental Security), provides guidance on the development and content of DoD home pages at the installation, major command, headquarters, and secretariat levels. In order to minimize home page development and maintenance costs, and to avoid duplication of home page capabilities, it is recommended that the Defense Environmental Network Information Exchange (DENIX) be used to disseminate and offer DoD-wide environmental, safety, and occupational health (ESOH) information. Component home pages should be used to disseminate installation, major command, headquarters, and Service secretariat-specific ESOH information. A copy of this memorandum can be found on DENIX at "<http://denix.cecer.army.mil/denix/Public/News/DU SDES/Memos/esoh.html>".

PUBLICATIONS OF INTEREST

Virus Hunter: Thirty Years of Battling Hot Viruses Around the World - by C.J. Peters, with Mark Olshaker, Anchor Books, New York, 1997, \$23.95 (ISBN: 0385485581). This personal history of the senior author's investigations of hemorrhagic fever viruses is, in the words of Neal Nathanson, University of Pennsylvania, Philadelphia, "a landmark memoir in the annals of infectious diseases" (Emerging Infectious Diseases 3(3): 413, JUL-SEP 97). Peters, a Johns Hopkins-trained physician and now Chief, Special Pathogens Branch, Division of Viral and Rickettsial Diseases, Centers for Disease Control and Prevention, has devoted the last 30 years of his life to field and laboratory studies of the hemorrhagic fevers, a group of agents remarkable for their extreme lethality in primates, their maintenance in often obscure zoonotic reservoirs, and their occurrence in remote regions of the world. These fevers dramatically exemplify the problem of emerging infections, which have captured the attention of both health workers and the public over the past decade.

AFPMB Technical Information Memorandum No. 36 - Personal Protective Techniques Against Insects and Other Arthropods of Military Significance. This Technical Information Memorandum (TIM) was adapted from U.S. Army Environmental Hygiene Agency (USAEHA)

Technical Guide No. 174 by the same title through the efforts of the AFPMB Repellents Committee and the U.S. Army Center for Health Promotion and Preventive Medicine (USACHPPM). It provides preventive medicine information and guidance to DoD personnel who may come in contact with nuisance or disease-carrying arthropods or who are responsible for protecting the health of such personnel. It describes the DoD Insect Repellent System and other techniques that provide maximum, safe protection. If you have not received a copy of this TIM and would like one, check the appropriate box on the last page of this issue and send the request to DPMIAC/AFPMB, ATTN: Mary Trutt, Forest Glen Section, Walter Reed Army Medical Center, Washington, DC 20307-5001. Please include a peel-off return address label with your request. - COL Lawyer, DPMIAC.

AFPMB Technical Information Memorandum No. 40 - Methods for Trapping and Sampling Small Mammals for Virologic Testing. - This excellent manual was prepared by James N. Mills, Ph.D., James E. Childs, Sc.D., Thomas G. Ksiazek, D.V.M., Ph.D., C.J. Peters, M.D., and Wallis M. Velleca, B.S. of the Centers for Disease Control and Prevention. It is being distributed by the AFPMB with permission of CDC as TIM 40. It is intended as a guide for those persons performing ecologic and epidemiologic studies involving populations of rodents that are potentially infected with hantavirus. However, the procedures outlined are appropriate for any study of small mammal populations that may harbor an infectious zoonotic agent capable of causing severe disease or death. Copies of this manual were mailed to all DoD military and civilian entomologists. Other DoD Pest Management Professionals who need a copy may obtain one while the supply lasts by sending a request to DPMIAC/AFPMB, ATTN: Mary Trutt, Forest Glen Section, Walter Reed Army Medical Center, Washington, DC 20307-5001. Please include a peel-off return address label with your request. - COL Lawyer, DPMIAC.

Operational Manual on the Application of Insecticides for the Control of the Mosquito Vectors of Malaria and Other Diseases. The DPMIAC, with permission of the World Health Organization, has reproduced 300 copies of this useful technical manual for distribution to DoD Pest Management Professionals. If you are a DoD Pest Management Professional and have not yet received

your copy, just send a request to DPMIAC/AFPMB, ATTN: Mary Trutt, Forest Glen Section, Walter Reed Army Medical Center, Washington, DC 20307-5001. Please include a peel-off return address label with your request. - COL Lawyer, DPMIAC.

World Directory of Arthropod Vector Research and Control Specialists. This directory, published in cooperation with the American Mosquito Control Association and the Society of Vector Ecologists, was last published in 1990. It contains useful listings, by country, of vector control specialists with their areas of specialty, professional affiliations and other pertinent information. If you wish to update your entry in the Directory or to be included for the first time, complete and submit the form located at the back of this issue. Questions concerning the World Directory should be directed to Dr. Eugne J. Gerberg at (352) 373-7384. - COL Lawyer, DPMIAC

SELECTED MEETINGS

OCTOBER 16-18, 1997.

The Second International Attractants Workshop will be held at the Florida Medical Entomology Laboratory in Vero Beach, FL immediately preceding the SOVE Second International Congress of Vector Ecology in Orlando.

If you are interested in attending and/or participating in this workshop, contact Dr. Dan Kline, USDA-ARS, 1600 SW 23rd Drive, Gainesville, FL 32604. Phone (352) 5933; Fax (352) 374-5922; E-mail <dkline@gainesville.usda.ufl.edu>.



OCTOBER 19-24, 1997. Second International Congress of Vector Ecology, sponsored by The Society for Vector Ecology, will be held in Orlando, FL, 19-24 OCT 97. The Congress will be held at the Holiday Inn International Drive Resort. For further information and registration materials, contact Gilbert L. Challet, Secretary-Treasurer, P.O. Box 87, Santa Ana, CA 92702, USA; Tel: (714) 971-2421, Ext. 148; Fax: (714) 971-3940.

OCTOBER 28-29, 1997. Urban Wildlife Conference, Pinellas County Cooperative Extension Service, 12175 125th Street North, Largo, FL 33774-3695. For information call Ms. Paula Jensen: (813)

582-2456

NOVEMBER 18-21, 1997. 156th Meeting, Armed Forces Pest Management Board - Washington, DC. Col Bob McKenna, AFPMB, Forest Glen Sect., WRAMC, Washington, DC 20307-5001, Tel: (301) 295-7476, Fax: 7473, DSN Prefix 295, e-mail: mckennrj@acq.osd.mil

DECEMBER 7-11, 1997. The American Society of Tropical Medicine and Hygiene will hold its 46th Annual Meeting in Orlando, FL, at Disney's Coronado Springs Resort. For further information, please contact the American Society of Tropical Medicine and Hygiene, 60 Revere Drive, Suite 500, Northbrook, IL 60062. Phone (847)480-9592; Fax (847) 480-9282; E-mail <astmh@aol.com>.

DECEMBER 14-18, 1997. The Entomological Society of America will hold its annual meeting at the Opryland Hotel, Nashville, TN. For further information contact Thomas A. Coudron, Program Chairman, USDA/ARS, Biological Control of Insects, 1503 S. Providence Road, Columbia, MO 65203, or check the ESA web site at: <<http://www.entsoc.org>>.

February 22-27, 1998. DoD Pest Management Workshop - Naval Air Station, Jacksonville, FL. Due to the size of the conference facilities, this triennial workshop is intended for DoD pest management professionals or their equivalent. Sponsored by the Armed Forces Pest Management Board. Point of Contact: CAPT Herbert T. Bolton, AFPMB Research Liaison Officer/Workshop Coordinator, USDA, ARS, CMAVE, P.O. Box 14565, Gainesville, FL 32604; (352) 374-5950, Fax (352) 374-5955; or e-mail: boltonht@acq.osd.mil

February 27, 1998. 157th Meeting, Armed Forces Pest Management Board - Naval Air Station, Jacksonville, FL. This meeting of the AFPMB and the AFPMB Committee meetings will be held in conjunction with the 1998 DoD Pest Management Workshop. Point of Contact: Col Bob McKenna, AFPMB, Forest Glen Section/WRAMC, Washington, D.C. 20307-5001, Tel: (301) 295-7476, Fax: 7473, DSN Prefix 295, E-mail: mckennrj@acq.osd.mil

MARCH 8-11, 1998. International Conference on Emerging Infectious Diseases, Marriott Marquis

Hotel, Atlanta, GA, USA. This conference will convene to (1) encourage the exchange of scientific and public health information on global emerging infectious disease issues, (2) highlight programs and activities that address emerging infectious disease threats, (3) identify program gaps, (4) increase emerging infectious disease awareness in the public health and scientific communities, and (5) enhance partnerships in addressing emerging infectious diseases. Deadline for submission of abstracts is October 31, 1997. Registration will be limited to 2500 participants. Additional information on abstract submission, registration, and exhibit opportunities can be obtained by sending an email message to: <meetinginfo@asmusa.org>, or by calling (202) 942-9248.

MARCH 8-11, 1998. The American Mosquito Control Association will hold its annual conference at John Ascuaga's Nugget, in Reno, Nevada. See our next issue of the TIB for details or check out the AMCA homepage at <<http://www.public.iastate.edu/~entomology/amca/amca.html>>.

COURSES FOR DoD PEST MANAGEMENT PERSONNEL

If you see any information that needs to be corrected or updated, please contact LCDR Corneil, who can be reached at Tel: (301) 295-7479, DSN Prefix 295 or e-mail: cornelja@acq.osd.mil

ARMY SPONSORED COURSES

1. For information on the following courses, contact SSG Sutton, Academy of Health Sciences, U.S. Army, ATTN: MCCS-HPM, Fort Sam Houston, TX 78234-6100, Tel: (210) 221-5270/4278, DSN Prefix 471. Classes are conducted at Fort Sam Houston, TX.



2. For information on courses in Germany, contact MAJ Tom Logan, HQ, USACHPPM-EUR, CMR 402, Box 137, APO AE 09180, Tel: 49-6371-86-8540/44, DSN: 486-8540/44. Classes are conducted at the USACHPPM-EUR, Landstuhl, Germany.

3. For information on courses taught at the

Environmental Training Center, contact Ms. Gail Boeff, ATTN: ATZR-BT, Fort Sill, OK 73503-5100, Tel: (405) 351-2111, Fax: (405) 351-5722, DSN Prefix 639. The Environmental Training Center at Fort Sill, OK, conducts a variety of environmental, natural resources and occupational health courses.

CHPPM-EUR Conducts Preventive Medicine Training. CHPPM-EUR conducted a 40-hour Preventive Medicine (PM) Specialist Refresher Workshop at Landstuhl, Germany 14-19 APR. Thirty-eight PM Specialists from V Corps and European Regional Medical Command units, plus 5 soldiers from the Royal Netherlands Army, attended the workshop. The workshop focused on the technical application of PM principles during field and contingency operations, highlighting experiences and lessons learned from recent deployments throughout the European and Central Command theaters. The comprehensive training program is unique to the theater and provides a critical training requirement for all PM Specialists. Application of the techniques discussed will enhance the PM Specialists' ability to accomplish a multiple array of PM missions during field deployments. CHPPM-EUR plans to offer the training course annually (or semi-annually if required) and to increase participation by US Air Force, US Navy, and multi-national units. (POC: CPT McPherson, DSN 486-7050, Landstuhl, Germany).

NAVY SPONSORED COURSES

1. For information on the following courses, contact Mr. F. De Masi, NDVECC, Naval Air Station Jacksonville, Box 43, Jacksonville, FL 32212, Tel: (904) 772-2424, Fax: (904) 779-0107, DSN Prefix 942. Classes are conducted at the Disease Vector Ecology and Control Center, NAS Jacksonville, Jacksonville, FL.

Pesticide Applicator Training (Core) (B-322-1070), Instruction for Initial Certification: SEP 8-15 97

Arthropod and Vertebrate Pest Management (B-322-1072), Initial Certification for Categories 7 & 8: SEP 22 - OCT 1 97

Recertification Course (B322-1074), Category 8:



NOV 4-5 97

Operational Entomology Training (B-322-1077), designed for A/D & Reserve PMTs, EHOs, Entomologists, Epidemiologists & others assigned to PM units:
OCT 20-31 97

2. For information on the following courses, contact HM1 Clayton, NDVECC, 19950 Seventh Ave., NE, Ste. 201, Poulsbo, WA 98370-7405, Tel: (360) 315-4450, Fax: 4455, DSN Prefix 322. Classes are conducted at the Disease Vector Ecology and Control Center, Bangor, WA.

Medical Entomology and Pest Management Technology for Preventive Medicine Technicians (B-322-0017):
NOV 6 - DEC 5 97

Recertification Course (B-322-1074), Category 8:
OCT 21-24 97

Shipboard Pest Management (B-322-1075):
NDVECC(B)
SEP 24 97
OCT 29 97
NOV 19 97
DEC 10 97

AIR FORCE SPONSORED COURSES

1. For information on courses at Sheppard AFB, contact the Programs Division, 2AF/DOP, Keesler AFB, MS 39534-5000, DSN: 597-1336. For information on course content, refer to AFCAT 36-2223, USAF Formal Schools or contact: Mr. Dale Hess, 366 TS/TSIM (Training Squadron/Training Squadron, Instructional Mechanical), 727 Missile Road, Sheppard AFB, TX 76311-2254, DSN: 736-5790, Fax: 3345. Classes are conducted at Sheppard AFB, TX.

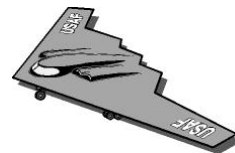
2. For information on the following course, contact Maj Terry Carpenter, USAF School of Aerospace Medicine/EH, Brooks AFB, TX 78235-5123, Tel: (210) 536-2058/59, DSN Prefix 240.

Operational Entomology Course (OEC) - #B30ZY43M3-000 is a two-week training course that includes vector bionomics and vector-borne disease profiles, surveillance and control of vectors and vector-borne diseases, and information, intelligence, and perspectives on developing country

operations during exercises, hostilities, and natural disasters. Academic instruction, practical exercises and field experiences simulate actual vector-borne disease surveillance and control situations. The course is designed to provide training for the following Air Force specialties and DoD personnel: public health officers (43H1/3); public health apprentices (4E031, E-2 and above with completion of 5-level CDC and the recommendation of your supervisor), journeymen (4E051), craftsmen (4E071), or superintendents (4E091); medical entomologists (43M1/3); flight surgeons (48A1/3 or 48P1/3); pest management apprentices (3E433, E-2 and above with completion of 5-level CDC and the recommendation of your supervisor), journeymen (3E453), craftsmen (3E473), or superintendents (3E490 with a prior AFSC 3E433, 3E453, and 3E473), or equivalent civilian pest management personnel; and other military and civilian public health and pest management personnel with the consent of the faculty. Quotas are obtained through the Unit or MAJCOM Training Managers. Army and Navy personnel may contact USAFSAM/EH to request attendance in OEC and are admitted as slots become available.

3. For information on the following course, contact Dr. Terry L. Biery, 757 AS/DOSE, YARS, Vienna, OH 44473-5000, Tel: (330) 392-1111/1178, DSN Prefix 346.

Aerial Application of Pesticides (Certification) - #AAP-001 is a one-week course that addresses the tenets and methodologies for aerial application of pesticides, with an emphasis on operational aspects and military applications. The course includes general principles, legal aspects, contracts, map types and preparation, spray system calibrations, aerial spray math, DoD spray systems, meteorological effects, occupational health and safety, operations and mission support, disease control, pilot's view, private applicator's view, environmental aspects, computer modeling, swath and droplet characterization, pesticide monitoring, public relations, contingency wartime usage, spill prevention and containment, and other pertinent operational issues involving the use of aerial spray. The course features guest lecturers from the U.S. Army, U.S. Navy, U.S. Department of Agriculture, private applicator firms, and other government agencies.



FEDERAL REGISTER

The following Federal Register listings are for March and April of this year. Our subscription to the FR was temporarily delayed. We are printing these listings now in case you may have missed seeing them.

VOL 62 No 49-62 (13-31 March 1997)

12-12524-261 **FWS** - Action - Proposed Rule - Migratory Bird Harvest Information Program; Participating States for the 1997-1998.

13-12054-61 **Fish and Wildlife Service, Interior (FWS)** - Action - Proposed Rule - Migratory Bird Hunting; Proposed 1997-1998 Migratory Game Bird Hunting Regulations (Preliminary) with Requests for Indian Tribal Proposals.

17-12539-41 **Office of Ocean and Coastal Resource Management (OCRM) National Ocean Service (NOS), National Oceanic and Atmospheric Administration (NOAA), Commerce.** - Action - Final Rule - Coastal Zone Management Program Regulations and National Estuarine Research Reserve System Regulations.

18-12829-30 **Environmental Protection Agency (EPA)** - Action - Notice of Availability - 1996 Food Quality Protection Act, Amendments to the Laws Governing the Regulation of Pesticides; EPA's Implementation Plan.

21-13707 **FWS** - Action - Notice of Document Availability and Public Comment Period - Notice of Availability of the Technical/Agency Draft Recovery Plan for Bruan's Rockress (*Arbiss perstellata*) for Review and Comment.

25-14093-101 - **FWS** - Action - Proposed Rule - Proposal to List the Preble's Meadow Jumping Mouse (*Zapus hudsonius preblei*) as an Endangered Species.

25-140101-103 - **FWS** - Action - Notice of Reopening of Public Comment Period - ETWP; Notice of Reopening of Comment Period on Reports and Other Data Pertaining to the Listing of the Bruneau Hot Spring Snail (*Pyrgulopsis bruneauensis*).

26-14414-17 **EPA** - Action - Notice - Notice of Receipt of Requests to Voluntarily Cancel Certain Pesticide Registrations.

26-14417-18 **EPA** - Action - Notice - Notice of Receipt of Requests for Amendments to Delete uses in Certain Pesticide Registrations.

27-14662-3 - **FWS** - Action - Notice of Status Reviews; Reopening of Comment Period - Endangered and Threatened Wildlife and Plants (ETWP); Notice of Status Reviews for the Alexander Archipelago Wolf (*Canis lupus ligoni*) and Queen Charlotte Goshawk (*Accipiter gentilis laingi*).

27-14799-827 **OCRM, NOS, NOAA, DOC.** - Action - Final Rule - Final Rule and Summary of Final Management Plan Implementing the Sanctuary Designation - Hawaiian Islands Humpback Whale National Marine Sanctuary.

28-14938-41 **FWS** - Action - Notice of Availability - Availability of the Final Environmental Impact Report/Statement for Issuance of Take Authorizations for Threatened and Endangered Species Due to Urban Growth Within the Multiple Species Conservation Program Planning Area in San Diego County, California.

VOL 62 No 63- (2- April 1997)

2-15640-46 **FWS** - Action - Proposed Rule - ETWP; Proposed Endangered Status for Blackburn's Sphinx Moth (*Manduca blackburni*) from the Hawaiian Islands.

2-15646-47 **FWS** - Action - Proposed Rule; Notice of Reopening of Comment Period - ETWP; Notice of Reopening of Comment Period on Proposed Rule to List Five Plants and a Lizard from Monterey County, California, as Endangered or Threatened.

3-15872-73 **FWS** - Action - Notice of 12-Month Petition Finding - ETWP; 12-Month Finding for a Petition to List the Santa Ana Sucker (*Catostomus santanae*) as Endangered.

3-15872-74 **FWS** - Action - Proposed Rule; Notice of Public Hearing - ETWP; Public Hearing on Proposed Rule to List the Northern Population of the Bog Turtle as Threatened and the Southern Population as Threatened Due to Similarity of

Appearance.

3-15915-16 **FWS** - Action - Notice of Availability of Record of Decision - Notice of Availability of Record of Decision and Statement of Findings on the Environmental Impact Statement on Reintroduction of the Mexican Wolf on its Historic Range in the Southwestern United States.

4-16108-12 **National Marine Fisheries Service (NMFS), NOAA, DoC** - Action - Emergency Interim Rule - North Atlantic Right Whale Protection; Emergency Regulations.

7-16518-19 **FWS** - Action - Proposed Rule; Notice of Reopening of Comment Period - ETWP; Notice of Reopening of Comment Period on Proposed Endangered Status for the Peninsular Ranges Population of the Desert Bighorn Sheep (*Ovis canadensis*).

VOL 62 No 105-125 (1-30 June 1997)

4-30578-80 **EPA** - Action - Notice - Notice of Receipt of Requests for Amendments to Delete Certain Pesticide Registrations.

5-30739-41 **Animal and Plant Health Inspection Service (APHIS), USDA** - Action - Final Rule - Imported Fire Ant; Approved Treatments.

5-30772-73 **FWS** - Action - Change in Listing Status - Endangered and Threatened Wildlife and Plants; Change in Listing Status of Steller Sea Lion (*Eumetopias jubatus*).

6-31044-54 **FWS** - Action - Proposed Rule - Humane and Healthful Transport of Wild Mammals, Birds, Reptiles and Amphibians to the United States.

6-31054-61 **FWS** - Action - Notice of Decision - Proposals by Other Countries to Amend Appendices to the Convention on International Trade in Endangered Species of Wild Fauna and Flora.

6-31125 **FWS** - Action - Notice of Document Availability - Availability of Draft Recovery Plan for the Santa Cruz Cypress (*Cupressus ambrasiana*) for Review and Comment.

6-31127-51 **FWS** - Action - Notice - Conference of the Parties to the Convention on International Trade in Endangered Species of Wild Fauna and Flora;

Tenth Annual Meeting.

6-31298-306 **FWS** - Action - Proposed Rule; Supplemental - Migratory Bird Hunting; Supplemental Proposals for Migratory Game Bird Hunting Regulations; Notice of Meeting.

11-31740-8 **FWS** - Action - Final Rule;- ETWP; Determination of Threatened Status for *Castilleja levisecta* (Golden paintbrush).

11-31748-57 **FWS** - Action - Final Rule;- ETWP; Determination of Threatened Status for the Steller's Eider (*Polysticta stelleri*).

11-31757-62 **FWS** - Action - Final Rule;- ETWP; Determination of Threatened Status for the Guajon (*Eleutherodactylus cooki*).

12-32070-1 **FWS** - Action -Notice of Status Reviews; Reopening of Comment Period- ETWP; Notice of Status Reviews for the Alexander Archipelago Wolf (*Canis lupis ligoni*) and the Queen Charlotte Goshawk (*Accipiter gentilis laingi*).

12-32154-76 - **OCRM, NOS, NOAA, DoC.** - Action - Notice of Effective Date; Modifications of Final Rule - Florida Keys National Marine Sanctuary Final Regulations.

12-32183-88 **Marine Fisheries Service, (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce** - Action - Announcement of Draft Policy; Request for Public Comments - Announcement of Draft Policy for Candidate Conservation Agreements. Activities.

12-32189-94 **FWS** - Action - Proposed Rule - Safe Harbor Agreements and Candidate Conservation Agreements.

13-32268-84 **FWS** - Action - Proposed Rule;- ETWP; Proposal to List the Klamath River Population Segment of Bull Trout (*Salvelinus*

federal register

confluentus) as an Endangered Species and Columbia River Population Segment of Bull Trout as a Threatened Species.

13-32328-31 **EPA** - Action - Notice - Notice of Receipt of Requests to Voluntarily Cancel Certain Pesticide Registrations.

17-32733-34 **FWS** - Action - Proposed Rule; Notice of Second Reopening of Comment Period - ETWP; Notice of Second Reopening of Comment Period on Proposed Endangered Status for the Peninsula Ranges Population of the Desert Bighorn Sheep (*Ovis canadensis*).

18-33029-38 **FWS** - Action - Final Rule - ETWP; Endangered Status for Four Plants from Vernal Pools and Mesic Areas in Northern California.

18-33038-39 **FWS** - Action - Final Rule - ETWP; Threatened Status for the Southern Oregon/Northern California Coast Evolutionarily Significant Unit of Coho Salmon (*Oncorhynchus kisutch*).

19-33368-74 **FWS** - Action - Final Rule - ETWP; Endangered Status for the Plant San Francisco Lessingia (*Lessingia germanorum*) from California.

19-33383-88 **FWS** - Action - Proposed Rule - ETWP; Proposed Endangered Status for Two Larkspurs from Coastal Northern California.

19-33388-90 **FWS** - Action - Proposed Rule Withdrawal - ETWP; Withdrawal of Proposed Rule to List San Bruno Mountain Manzanita (*Arctostaphylos imbricata*).

19-33390-91 **FWS** - Action - Notice of Document Availability - ETWP; Notice of Availability of Draft Recovery Plan for the Lee County Cave Isopod (*Lirceus usdagalun*) for Review and Comment.

20-33537-39 **APHIS** - Action - Interim Rule and Request for Comments - Mediterranean Fruit Fly; Addition to Quarantined Areas; Regulated Articles.

20-33607-20 **Corps of Engineers, Department of the Army, DoD; Natural Resources Conservation Service, USDA; Federal Highway Administration, Department of Transportation; EPA; FWS** - Action - Notice - The National Action Plan to Implement the Hydrogeomorphic Approach to Assessing Wetland Functions.

20-33675-76 **National Park Service** - Action - Notice - Notice of Inventory Completion for Native American Human Remains and Associated Funerary Objects from Hawaii in the Control of Fort Kamehameha and Hickam Field, United States Army, U.S. Army Garrison, HI.

23-33798-99 **FWS** - Action - Notice of Document Availability - Notice of Availability of Draft Recovery Plan for the Marsh Sandwort (*Arenaria paludicola*) and Gambel's Watercress (*Rorippa gambelii*) for Review and Comment.

23-33799 **FWS** - Action - Notice of Document Availability - Notice of Availability of Draft Recovery Plan for the Stephens Kangaroo Rat (*Dipodomys stephensi*) for Review and Comment

23-33862-63 **EPA** - Action - Notice of Intent to Approve Amended Certification Plan - Department of Energy Plan for Certification of Pesticide Applicators.

23-33960-65 **FWS** - Action - Proposed Rule - Migratory Bird Permits; Proposed Depredation Order for the Double-Crested Cormorant.

24-34043-44 **APHIS** - Action - Notice - Availability of an Environmental Assessment and Finding of No Significant Impact.

25-34190-97 **FWS** - Action - Proposed Rule - ETWP; Proposed Endangered Status for the Plant Ione Buckwheat (*Eriogonum Apricum*) and Proposed Status for the Plant Ione Manzanita (*Arctostaphylos myrtifolia*).

27-34752-55 - **EPA** Action - Notice - Notice of Receipt of Requests to Voluntarily Cancel Certain Pesticide Registrations.

30-35116-17 **FWS** - Action - Proposed Rule; Notice of Third Reopening of Comment Period - ETWP; Notice of Third Reopening of Public Comment Period on Proposed Rule to List 10 Plants from the Foothills of the Sierra Nevada Mountains as Threatened or Endangered.

VOL 62 No 126-147 (1-31 July 1997)

2-35762-35773 **FWS** - Action - Proposed Rule -

ETWP; Proposed Establishment of a Nonessential Experimental Population of Grizzly Bears (*Ursus arctos horribilis*) in the Bitterroot Area of Idaho and Montana.

3-36049-50 **NMFS, NOAA, DoC** - Action - Issuance of Scientific Research Permit No. 859-1373 - Marine Mammals.

8-36481-82 **FWS** - Action - Notice of 90-Day Petition Finding and Initiation of Status Review - ETWP; 90-Day Finding for a Petition to List the Southern California Population of the Mountain Yellow-Legged Frog (*Rana muscosa*) with Critical Habitat.

8-36482-84 **FWS** - Action - Notice of 90-Day Petition Finding and Initiation of Status Review - ETWP; 90-Day Finding for a Petition to List the Lesser Prairie-Chicken (*Tympanuchus pallidicinctus*) as Threatened.

8-36568-69 **FWS** - Action - Notice of Document Availability - Notice of Availability of the North Cascade Ecosystem Recovery Plan Chapter for the Grizzly Bear (*Ursus arctos horribilis*) Recovery Plan.

9-36645-46 **APHIS** - Action - Interim Rule and Request for Comments - Gypsy Moth Generally Infested Areas.

15-37852-60 **FWS** - Action - Proposed Rule Withdrawal- ETWP; Withdrawal of the Proposed Rule to List the Flat-tailed Horned Lizard (*Phrynosoma mcallii*) as Threatened.

16-38081-82 **EPA** - Action - Notice - Notice of Receipt of Requests for Amendments to Delete Uses in Certain Pesticide Registrations.

16-38084-87 **EPA** - Action - Notice - Notice of Receipt of Requests to Voluntarily Cancel Certain Pesticide Registrations.

21-38932-39 **FWS** - Action - Final Rule - ETWP; Final Rule to Designate the Whooping Cranes of the Rocky Mountains as Experimental Nonessential and to Remove Whooping Crane (*Grus americana*) Critical Habitat Designations from Four Locations.

21-38953-58 **FWS** - Action - Proposed Rule - ETWP; Proposed Threatened Status for Newcomb's

Snail (*Erinna newcombi*) from the Hawaiian Islands.

21-38958-59 **FWS** - Action - Notice of Document Availability and Public Comment Period - Notice of Availability of a Draft Recovery Plan for California Freshwater Shrimp (*Syncaris pacifica* Holmes 1895) for Review and Comment.

22-39129-47 **FWS** - Action - Final Rule - ETWP; Final Determination of Critical Habitat for the Southwestern Willow Flycatcher (*Empidonax traillii extimus*).

22-39147-77 **FWS** - Action - Final Rule - ETWP; Final Rule to Extend Endangered Status for the Jaguar (*Panthera onca*) in the United States.

22-32909-10 **FWS** - Action - Notice of Document Availability - Availability of Draft Recovery Plan for Four Species of Hawaiian Ferns for Review and Comment.

22-39210-11 **FWS** - Action - Notice of 9-Day Petition Finding and Initiation of Status Review - ETWP; 90-Day Finding for a Petition to List the Stone Mountain Fairy Shrimp (*Branchinella lithaca*) as Endangered.

23-39517-18 **EPA** - Action - Notice - Cancellation of Pesticides for Nonpayment of 1997 Registration Maintenance Fees.

23-39712-36 **FWS** - Action - Proposed Rule; Supplemental - Migratory Bird Hunting; Proposed Frameworks for Early-Season Migratory Bird Hunting Regulations and Final Regulatory Alternatives for the 1997-98 Duck Hunting Season.

24-39747-55 **APHIS** - Action - Final Rule - User Fees; Agricultural Quarantine and Inspection Services.

28-40319-25 **FWS** - Action - Proposed Rule - ETWP; Proposed Rule to List the Illinois Cave Amphipod (*Gammarus acherondytes*) as Endangered.

28-40325-29 **FWS** - Action - Proposed Rule - ETWP; Proposed Endangered Status for the Plant *Sidalcea Keckii* (Keck's Checker-mallow) from Tulare County, California.

28-40335-39 **NMFS and NOAA** - Action - Notice of

Issuance of an Incidental Harassment Authorization
- Small Takes of Marine Mammals Incidental
Specified Activities; Lockheed Launch Vehicles at
Vandenberg Air Force Base, CA.

31-40954-74 **FWS** - Action -Final Rule - ETWP;
Final Rule for 13 Plant Taxa From the Northern
Channel Islands, California.

31-41016-19 **FWS** - Action -Proposed Rule
Withdrawal - ETWP; Withdrawal of Proposed Rule
to List *Dudelya blochmaniae* ssp. *insularis*, *Dudleya*
sp. nov. and "East Point," (*Heuchera maxima*) as
Endangered.

ARMED FORCES PEST MANAGEMENT BOARD

DoD PEST MANAGEMENT PROFESSIONALS, NATURAL RESOURCE MANAGERS, BOARD MEMBERS, AGENCY REPRESENTATIVES AND LIAISON REPRESENTATIVES:

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SEND TO: DPMIAC, AFPMB, Forest Glen Section, WRAMC, Washington, DC 20307-5001 or FAX to (301) 295-7483 - ATTENTION: Mrs. Mary Trutt

NOTICE OF CHANGE OF ADDRESS

EFFECTIVE DATE _____

NAME _____

TITLE (Check one): MR. _____ MRS. _____ MS. _____ DR. _____

RANK or GRADE _____

ADDRESS _____

COMMERCIAL TELEPHONE _____

DSN TELEPHONE _____ FAX _____

E-MAIL ADDRESS _____

PMP CATEGORY (ME, CE, AG, FO, WB, LM, GB, NR, NG, RE; see page 3) _____

POSITION _____

COMMENTS (If contractor, please indicate DoD affiliation) _____
